Operating Instructions

Color Video Camera

WV-6000 Series

Panasonic®

Before attempting to connect or operate this product, please read these instructions completely.

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CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Warning :

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instructions manual, may cause harmful interference to radio communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

The serial number of this product may be found on the rear panel of the unit.

You should note the serial number of this unit in the space provided and retain this instructions as a permanent record of your purchase to aid identification in the event of theft.

Model No. WV-6000

Serial No. _____

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

PREFACE

Panasonic introduces a new self-contained, compact professional single tube ENG/EFP portable color camera. Incorporating Panasonic's most recent video technology, this camera offers you advance performance at a modest price.

This camera utilizes a high-band (6MHz) 2/3" SATICON™ tube which produces excellent color quality with 420 lines horizontal resolution at center.

The WV-6000 also offers you operational convenience and system flexibility. Its low profile design permits unobscured vision for cameramen, and its compact size and lightweight construction provides for a minimum of operator discomfort.

The WV-6000 is built to go just about anywhere. Its ENG tough metal casing and magnesium die-cast chassis give it a high degree of internal strength and RFI protection.

FEATURES

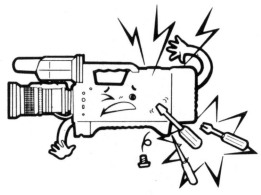
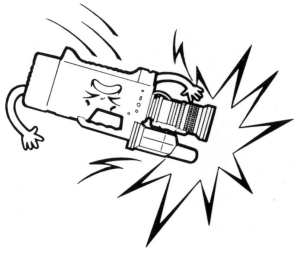
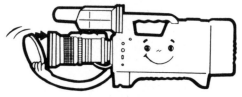
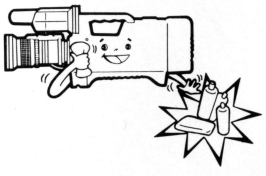
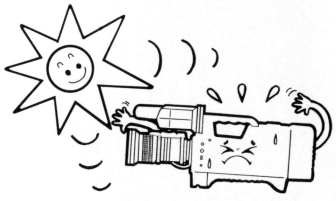
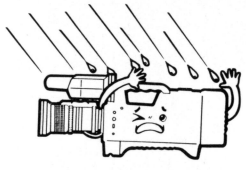
1. Self-contained, well-balanced, compact professional single tube ENG/EFP portable color camera.
2. High-band (6MHz) 2/3" integral stripe filter SATICON™ tube for producing 420 lines horizontal resolution (luminance).
3. System use with the Panasonic portable video recorders.
4. Studio operation with optional WV-RC60 remote control unit (RCU), WV-VF65 5" CRT viewfinder (4.5" actual visual size, measured diagonally), and studio conversion (lens control) kit.
5. Internal sync generator with gen-lock operation for EFP use, plus horizontal and subcarrier phase adjustments.
6. NTSC output for use with any VTR.
7. 1.5" monochrome electronic viewfinder and optional 1.5" color electronic viewfinder (1-3/8" actual visual size, measured diagonally), tilts and adjusts for convenient viewing. Viewfinder is detachable for studio operation.
8. Front-mounted stereo microphone with windscreen. M3 jack for use with an external microphone.
9. Auto-iris 12:1 power servo control zoom lens 10.5 - 126mm f1.6.
10. Close up operation at 2 inch (5 cm) away with Macro function.
11. Operates on four different power sources :
    Rear mounted battery pack, external DC (through 4-pin connector), portable VTR (operated by external AC adaptor), WV-RC60 RCU.
12. Signal-to-noise ratio of 50dB (luminance) at the recommended illumination of 140 footcandles at f4.0.
13. Two-position digital automatic white set with memory.
14. AGC ON/OFF switch and +6dB and +12dB high gain selection switch.
15. Switchable audio output level (−20dBm or −60 dBm).
16. Built-in 2H vertical enhancer.
17. Full color bar generation with 7.5IRE setup.
18. Horizontal and vertical blanking width are switchable internally.
19. Zebra pattern level indicator.
20. Built-in character generator for titles (Title and Subtitle).
21. Backup battery for titles, date and time to function continuously.
22. REC review function for prompt recording confirmation (with Panasonic specified portable VTR).
23. Graphics display by microprocessor as;
    (A) Graphics display functions with any VTR
        * White-color title and subtitle
        * Date
        * Time
        * Stopwatch with lap time feature
        * Record
        * Fade
        * Warning for battery, backup battery, white balance and lighting
    (B) Other graphics display functions with only specified VTR such as Panasonic portable VTR, AG-2400.
        * Warning for Tape
    (C) Other graphics display function with only specified VTR such as Panasonic portable VTR, NV-9450.
        * Warning for VTR alarm
24. Fade in/out effect (audio and video).
25. VHS/VTR compatibility switch for polarity selection.
26. Built-in remote controls for playback modes of specified portable VTR such as Panasonic AG-2400.
27. Aluminum alloy die-cast chassis for rigid alignment of the optical system.

TM : Trademark

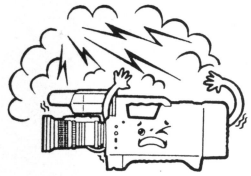
CAUTION : THIS CAMERA MAY NOT FUNCTION PROPERLY IF IT IS CONNECTED TO THE VTR OF OTHER MANUFACTURER.

PRECAUTIONS

The WV-6000 is a sensitive, high quality instrument and should be regarded as such. Because it is an electrical device, the danger of electric shock exists if it is used carelessly.

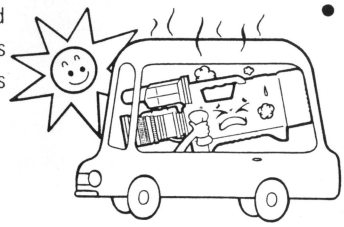
DON'TS		DO'S
x Do not attempt to disassemble the camera or RCU. In order to prevent electric shock, do not remove screws or cover. There are no user-serviceable parts inside.		• Do refer any servicing to qualified service personnel.
x Do not abuse the camera. Avoid striking, shaking etc. The camera contains a sensitive pick-up tube which could be damaged by improper handling or storage.		• Do handle the camera with care.
x Do not let the lens remain uncapped when the camera is not in use. If the lens is not installed, do not leave the lens mount hole uncovered. Do not leave the lens cap on when the power is turned on. This can reduce the life of the pick-up tube.		• Do protect the precision lens by placing the lens cap over the lens when the camera is not in use. If the lens is not installed, protect the surface of the pick-up tube by placing the body cap into the lens mount hole. Always remove lens cap before turning the power on.
x Do not touch the surface of the lens or pick-up tube with your fingers.		• Do use a mild blower or lens cleaning tissue designed for coated lens, to clean the surface of the lens or pick-up tube in the event that they become dirty.
x Do not use strong or abrasive detergents when cleaning the camera body.		• Do use a dry cloth to clean the camera if it is dirty. In case the dirt is hard to remove, use mild detergent and wipe gently.
x Do not aim the camera toward the sun, whether it is turned on or not. This action could permanently damage the pick-up tube.		• Do use caution when operating the camera in the vicinity of spot lights or other bright lights, and light reflecting objects.
x Do not expose the camera or RCU to rain or moisture, or try to operate it in wet areas. Do not operate the camera or RCU if it becomes wet.		• Do take immediate action if ever the camera or RCU do become wet. Turn power off and have the unit checked by an authorized serviceman.

x Do not operate the camera and RCU in the field during an electrical (lightning) storm.



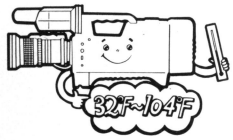
- Do follow the normal safety precautions to avoid personal injury.

x Do not leave the camera or RCU in a closed car or trunk during summer. Temperatures can reach or exceed the limits for devices within the camera.



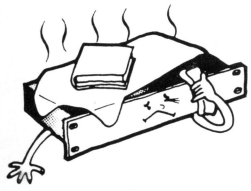
- Be aware of the temperature in the car or remove the equipment to a more moderate environment.

x Do not use the camera in an extreme environment where high temperature or high humidity exist.



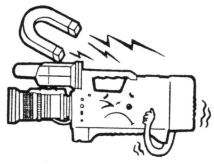
- Use the camera in environments where temperatures are within 32°F ~ 104°F (0°C ~ +40°C), and humidity is within 30% ~ 90%.

x Do not leave the camera and RCU turned on when not in use.
Do not turn the power on and off repeatedly without use. Do not block the ventilation slots.



- Always turn the power off when the camera is not going to be used, this will extend the life of the pick-up tube. Operate the camera and RCU only where there is adequate ventilation.

x Do not use near sources of strong magentic fields.
Fluorescent lights, motors or other sources of magnetic fields may distort or otherwise adversely affect images.

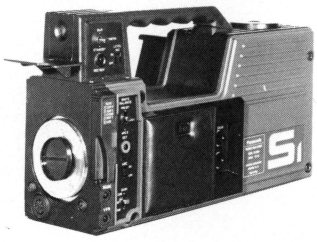


- Do use the camera far from the sources of strong magnetic fields.

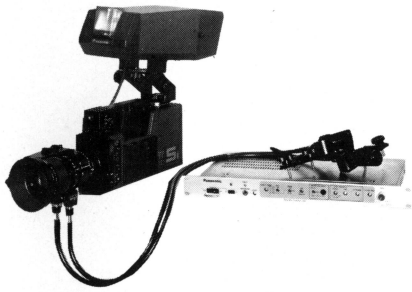
COMPOSITIONS FOR WV-6000 SERIES

■ ENG Color Camera
(WV-6000)

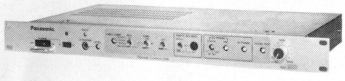
■ ENG Color Camera Head
(WV-6000H)



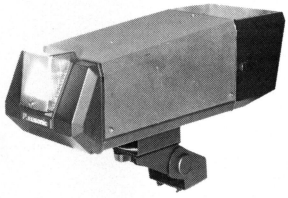
■ Studio Configuration
(WV-6000ST)



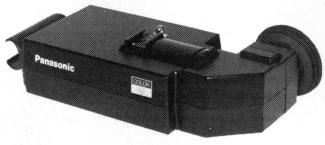
■ Remote Control Unit (RCU)
(WV-RC60)



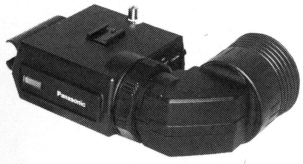
■ 5" Monochrome
Electronic Viewfinder
(WV-VF65)



■ 1.5" Color Electronic
Viewfinder
(WV-VF61)

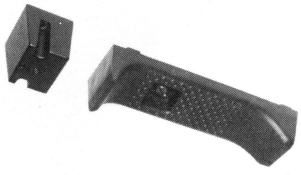


■ 1.5" Monochrome
Electronic Viewfinder
(WV-VF60)

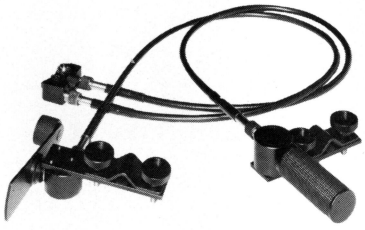


■ Servo Control Zoom Lens
(WV-LZ12/12)

■ Shoulder Pad
(WV-Q40A)



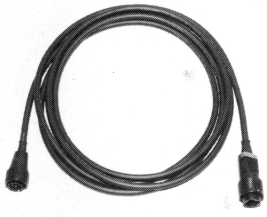
■ Studio Conversion Kit
(WV-LK11)



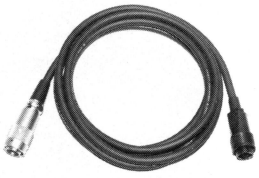
■ Stereo Microphone
(WV-MC60)

■ Battery Pack
(WV-PS60)

■ VTR Cable
(WV-CA14/10)

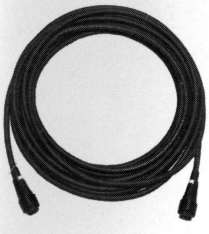


(WV-CA14/14)



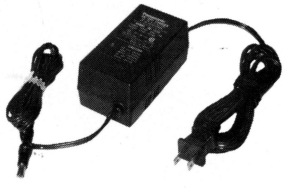
■ 14-pin VTR Extension
Cable (14H-30)

■ Studio Cable
(14C-30)



■ Studio
Extension Cable
(14C-100)

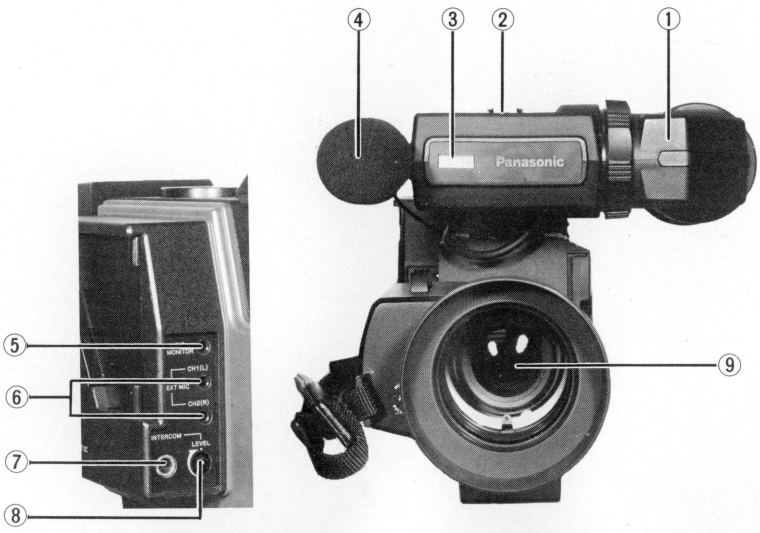
■ Battery Charger
(DE-1232)

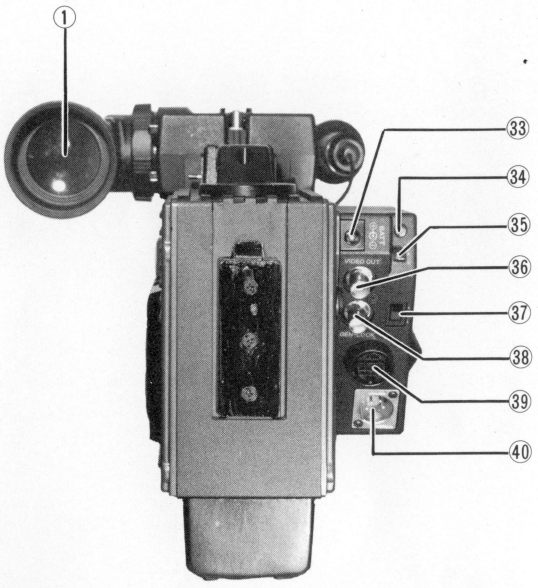


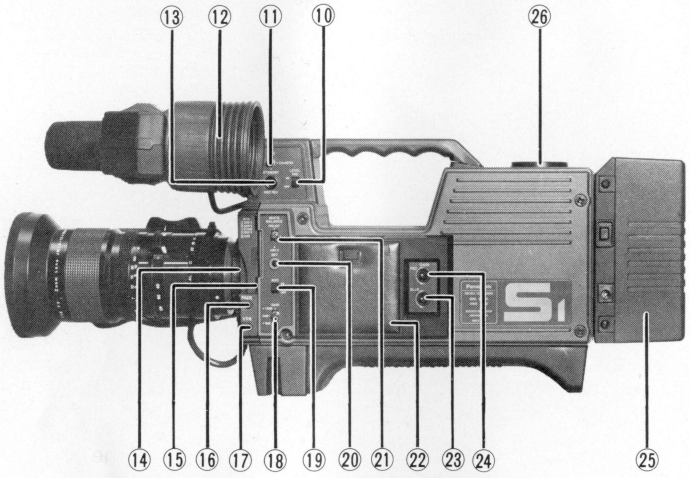
■ Carrying Case
(WV-CC60)

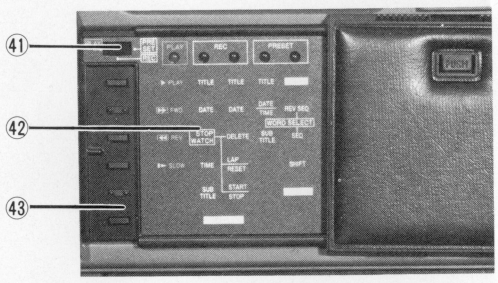
MAJOR OPERATING CONTROLS

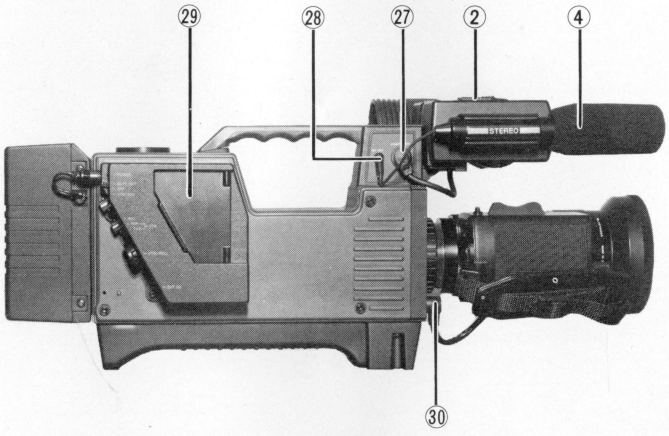
ENG Color Camera System WV-6000

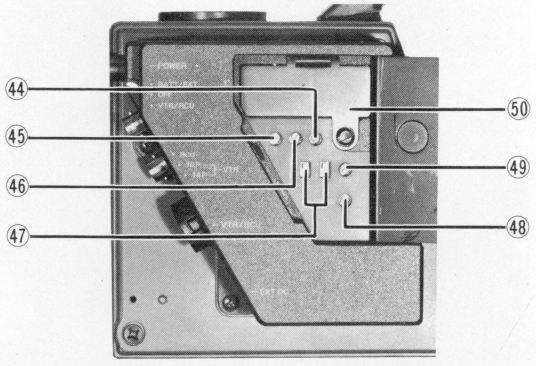












CONTROLS AND THEIR FUNCTIONS

ENG Color Camera WV-6000

1 Electronic Viewfinder (Tiltable)
This is a small 1.5" (1-3/8" actual visual size) TV monitor showing the actual picture which the lens sees. The viewfinder is tiltable and can be adjusted to upward or downward turn (approximately 90°) each from horizontal position. It can also be slid approximately 9/16" (15 mm) horizontally.

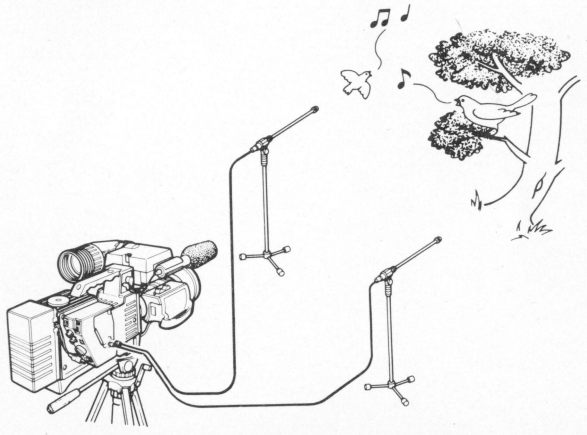
2 Accessory Shoe
This accessory shoe is used for mounting a light source.

3 Tally Lamp
This tally lamp is operated when this unit is used in full system operation with optional remote control unit and special effects generator or is used in conjunction with the Panasonic portable VTR. The tally lamp indicates to the camera operator, RCU operator and other people that the camera is actually shooting the scene.

4 Detachable Stereo Microphone (for stereo audio VTR)
This stereo microphone is unidirectional and is more sensitive to sounds coming from the direction. If the external microphone is connected to the External Microphone Connector 6, this microphone is automatically disconnected from the line.

5 Audio Monitoring Jack (AUDIO MONITOR)
When the stereo earphone is connected, the sound of mic input connector 28 or 6 can be monitored. The M3 size stereo connector is used.

6 External Microphone Connector (EXT MIC)
These connectors are used to connect external microphones (not supplied). When external microphones are connected, the camera's detachable microphone will not work. The M3 size connectors are used.



7 Intercom Jack (INTERCOM)
This intercom jack is used for intercommunication between camera operator and RCU operator in system operation with special effects generator.

8 Intercom Level Control (INTERCOM LEVEL)
Turn this control to have optimum sound level for the headset connecting to the intercom jack 7.

9 Auto Iris Power Servo Control Zoom Lens
This is a 10.5 – 126 mm lens for the 2/3 inch tube with automatic & manual iris control and power servo control zoom which has a Panasonic special mount and F1.6 maximum aperture. The picture size can be magnified 12 times with use of the zoom feature. Just rotate the zoom/macro ring for a close-up or wide angle. The enlarged close-up picture at macro function can be made at a distance of up to 5cm (2 inch).

10 Level Indicator ON/OFF Switch (LEVEL IND ON/OFF)
When this switch is set to the ON position, the picture which exceeds the specified level (100 IRE unit) turns into the zebra pattern on the viewfinder. When the background is bright and the object appears to be too dark in automatic iris control mode, adjust the lens iris in the manual iris control mode so that the object on the viewfinder is just before turning into the zebra pattern. In this case the background may become saturated.
Set this switch to the OFF position in the automatic iris control mode.

Note : If excessively bright light enters into the camera at the AGC switch ON by manually opening the lens iris, the zebra pattern may not be seen on the EVF due to characteristic of pick-up tube even output picture is saturated.

11 Color Bar/Camera/Standby Selection Switch (BAR/CAMERA/STANDBY)
This switch selects the operating condition for camera as;

BAR : Full field color bar (75% amplitude, 77 IRE white) is provided from the Video Output Connector 36 and 14-pin VTR/RCU Connector 39. The power indicator lights red.

CAMERA : The actual picture which the lens sees is displayed. The power indicator lights red.

STANDBY : The camera circuit is turned OFF to conserve the battery, except for the heater of the pick-up tube and viewfinder CRT. The power indicator lights green.

Note :
1. The BAR and CAMERA position are not functional when the RCU is used.
2. Do not set it to the STANDBY position when the RCU is used.

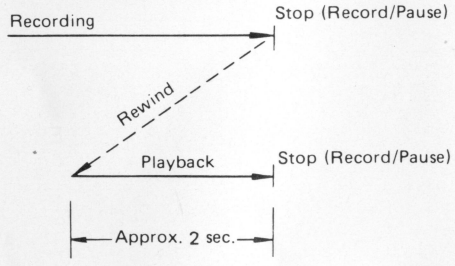
12 Eye Cap

Blocks out external light. Rotate the eye cap for the best eye focal distance.

13 Rec Review Button (REC REV) for Panasonic Specified Portable VTR

When this camera is operated with Panasonic specified portable VTR such as AG-2400, this function operates and this button is only activated in the pause (Record/Pause) mode of the portable VTR.

When this button is pressed after recording and the portable VTR is in pause mode, the portable VTR automatically rewinds the tape for quick review and playbacks the tape for approximately 2 seconds to make sure the recording conditions.



14 Lens Mounting Ring

Rotate the lens mounting ring on the lens counter-clockwise to remove the lens from the camera.

15 Filter Wheel Cover

To set the filter wheel, flip-open this cover.

The filter wheel is a four-position wheel which has two built-in color temperature conversion filters and one ND filter as;

(1) 3200°K - indoor light
(2) 5600°K + 12.5% ND - daylight (sunny)
(3) 5600°K - daylight (cloudy/rainy)
(4) Close

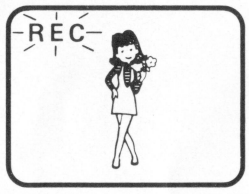
Select the position according to the light source which illuminates the scene being shot (see page 45).

16 Fade Button (FADE)

This button can be used when the fade-in effect at the beginning of the recording or the fade-out effect at the end of the recording is desired. When this button is activated, the graphic F is displayed in the EVF. Refer to page 43 for details.

17 VTR Start/Stop Button (Parallel Operation)

This is a push-push type button which is used to change the recorder from pause (Record/Pause) to record as well as a VTR Start/Stop Button on the lens. Push the button once and the recorder will start to record as shown by the blinking REC graphics in the viewfinder.



Push the button again and the recorder will pause (Record/Pause), and the blinking REC graphics will disappear. This button is only operative when remote pause is connected, i.e. camera cable is connected directly to VTR and Remote operation is selected.

18 High Gain Selection Switch (+6 dB/0 dB/+12 dB)

This switch is functional only when the AGC ON/OFF Switch 19 is set to the OFF position. Normally set this switch to 0 dB position. +6 dB or +12 dB position increases the video output amplitude which is approximately equivalent to opening the lens iris one or two F stops.

Note : This switch is not functional when the RCU is used.

19 AGC ON/OFF Switch (AGC ON/OFF)

The automatic gain control (AGC) can be selected ON or OFF as;

ON position : The high sensitivity at low illumination is desired.

OFF position : The natural picture at low illumination is desired.
At this position, video output amplitude can be increased +6dB or +12dB by setting the High Gain Selection Switch 18.

Note : This switch is not functional when the RCU is used.

20 White Set Button

The white balance can be set by pressing this button while aiming the camera at the white object such as white wall or paper when the White Balance Selection Switch 21 is placed to the AWC1 or AWC2 position.

The white balance setting will be necessary when the WHITE graphics is blinking in the EVF.

The white balance setting will also be necessary when the camera is panned from indoor to outdoor or vice versa. In this case, the blinking WHITE graphics is not displayed.

Aim the camera at the white object such as white wall or paper and press this button momentarily to automatically activate the white balance setting. After approximately 2 seconds, the white balance setting is completed and the blinking WHITE graphics in the EVF will disappear.

If the blinking WHITE graphics remains, reset the white balance after confirming the object and the position of Filter Wheel 15 referring to the Table on page 45.

Note :

(1) The white balance setting should be done at the center (detent) position of the Red and Blue Gain Control Knob.

(2) The white balance may not be properly balanced under low illuminations when the EVF of the camera displays the blinking LIGHT graphics.

(3) It is recommended that the white balance should be set after a few minutes warm-up period.

(4) Even if the white object can not be found, the acceptable white balance setting can be made by aiming the camera at a whitish object and capping the lens with an attached white lens cap.

(5) This button is not functional when the RCU is used.

21 White Balance Selection Switch (WHITE BALANCE PRESET/AWC1/AWC2))

This switch selects operational condition of white balance as;

PRESET : Proper white balance is reproduced when the camera is aimed at the object illuminated by 3200°K color temperature light and the Filter Wheel 15 is set to the position 1.

AWC1 : The white balance can be set automatically at this position. While aiming the camera at a white object such as white wall or paper, press the White Set Button 20 momentarily to activate the automatic white balance setting. The white balance is automatically set within approximately 2 seconds. The WHITE graphics is blinking to indicate the white balance setting and it disappears when the white balance setting is completed. If the blinking WHITE graphics remains, reset the white balance after confirming the object and position of filter wheel 15 referring to the Table on page 45.

The white balance set at this position is held for approximately one year by a backup battery even after the power switch is turned OFF. Therefore, if the color temperature of the object/scene condition remains same, it is unnecessary to reset the white balance.

When the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.

AWC2 : The white balance can be set automatically same as the AWC1 position.

Note :

(1) The white balance for 2 differing light conditions such as indoor and outdoor light can be preset using two setting positions (AWC1 and AWC2) prior to actual recording.

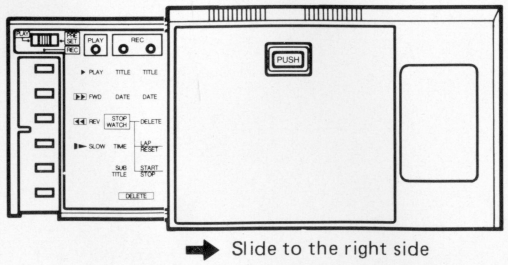
(2) The Red and Blue Gain Control 23 & 24 should be set at the center detent position.

(3) This switch is not functional when the RCU is used.

22 Cover for Key Board

Open this cover by sliding it to the right side to operate the key board for title, time, date and stopwatch display.

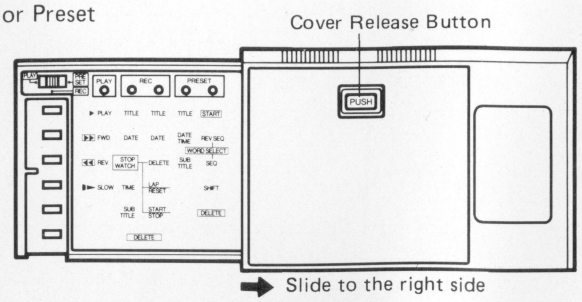
For Display



➡ Slide to the right side

While pressing the Cover Release Button, slide the cover to the right side for resetting the title, time and date graphics.

For Preset



23 Blue Gain Control (BLUE GAIN)

The white balance can be set manually by this control and the Red Gain Control 24 when the White Balance Selection Switch 21 is set to the PRESET position. AT the center detent position, the blue signal level is preset to the standard level at 3200°K color temperature light.

After setting the automatic white balance at the AWC1 and AWC2 position, the color reproduction can also be fine-adjusted by this control.

24 Red Gain Control (RED GAIN)

The white balance can be set manually by this control and the Blue Gain Control 23 when the White Balance Selection Switch 21 is set to the PRESET position.

At the center detent position, the red signal level is preset to the standard level at 3200°K color temperature light.

After setting the automatic white balance at the AWC1 and AWC2 position, the color reproduction can also be fine-adjusted by this control.

25 Battery Pack (Option)

An optional battery pack WV-PS60 is mounted on the camera. The operating time of WV-PS60 is approximately 2 hours.

26 Viewfinder Mounting Cover

When installing the 5 inch viewfinder WV-VF65, attach a mounting base for WV-VF65 after removing this cover.

27 Viewfinder Connector (VIEWFINDER)

This is a receptacle for the connection of 1.5 inch and 5 inch electronic viewfinder.

28 Stereo Microphone Input Connector (INT MIC)

This connector is used to connect the detachable stereo microphone.

29 Cover for Fine-adjustment

When subcarrier and horizontal phase adjustment for the system operation using a special effects generator and pedestal adjustment are required, open this cover and adjust controls.

30 Lens Connector (LENS)

This lens connector is used for connecting the auto iris power servo control zoom lens which automatically adjusts incoming light intensity by changing lens iris opening.

31 VTR Compatibility Switch (RUN ⊕ / ⊖)

The logic level of the camera trigger for different polarity of VTR may be incompatible and reversed, so that the VTR pauses when it should run and vice versa. In this case, the trigger polarity can be reversed by this switch. It is factory-set to the ⊕ position.

32 Audio Level Selection Switch (AUDIO LEVEL −20dB/−60dB)

The audio output level for VTR can be selected −20dB or −60dB. It is factory-set to the −20dB position.

33 Battery Connector (BATT)

This is used to connect the battery cord from the optional battery pack WV-PS60.

34 Power Indicator (POWER)

This indicator lights red when the camera is in operating condition or in the color bar mode. When the camera is in the standby mode, the indicator lights green.

35 Power Switch (BATT/EXT, OFF, VTR/RCU)

This switch turns ON the power of the camera as;

BATT/EXT : This position is used for battery pack or external DC.

OFF : The power is OFF.

VTR/RCU : This position is used for selecting the power source from VTR (operated by AC adaptor) or the remote control unit (RCU) through 14-pin VTR/RCU Connector.

36 Video Output Connector (BNC) (VIDEO OUT)

NTSC composite video signal is provided at this connector.

37 VTR/RCU Selection Switch (RCU/10P-VTR/14P-VTR)

This switch selects the VTR or RCU connected to the 14 pin VTR/RCU Connector 39 as;

RCU : The remote control unit (RCU) is connected to the VTR/RCU Connector.

10P-VTR : The Panasonic portable VTR with 10-pin camera connector such as AG-2400 is connected to the VTR/RCU connector using a VTR cable WV-CA14/10.

14P-VTR : The Panasonic 3/4" portable VTR with 14-pin camera connector such as NV-9450 is connected to the VTR/RCU connector using VTR cable WV-CA14/14.

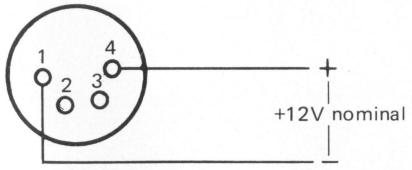
Note :
(1) Set this switch properly before turning ON the Power Switch 35.
(2) If this switch is set incorrectly, the camera may not function properly especially the REC graphics on the EVF. In this case, reset this switch after turning OFF the Power Switch 35.

38 Gen-Lock Input Connector (BNC) (GEN-LOCK)
The color video signal of the camera is synchronized to the black burst signal or the NTSC composite video signal which is introduced into this connector from the system reference unit. The synchronization to the system reference signal is necessary for EFP (Electronic Field Production) and studio operation.

39 14-Pin VTR/RCU Connector (VTR/RCU)
When used in conjunction with a Panasonic portable VTR, the following VTR cable is connected between the camera and VTR. This connector is also used for connecting the 14-pin studio cable from the remote control unit (RCU) for system operation. The VTR/RCU Selection Switch 37 should be selected according to the cable/unit connected to this connector.

Portable VTR with 10-pin camera connector such as Panasonic AG-2400 :
VTR cable WV-CA14/10
Portable VTR with 14-pin camera connector such as Panasonic NV-9450 :
VTR cable WV-CA14/14
Remote Control Unit (RCU) :
Studio cable 14C-30

40 4-Pin External DC Input Connector (EXT DC)
This connector is used for connecting a cable from an external DC nominal 12V 900mA power source (a belt type battery or a car battery for example).



CAUTION : Use only with a 12V DC power supply marked Class 2.
Do not use with an external storage battery unless provided with a fuse rated at 8 amps or less and located within 5 inches of the battery connecting means.

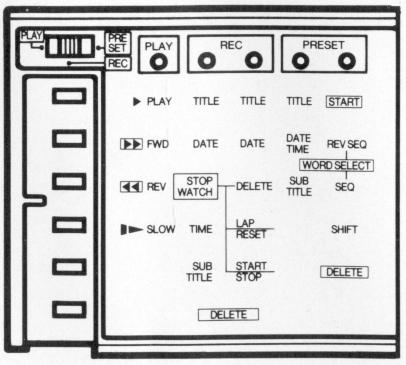
41 Key Board Selection Switch (PLAY/REC/PRESET)
Function of key board is selected by this switch as;

PLAY : Panasonic specified VTR such as AG-2400 which has a camera remote switch can be remotely controlled by the buttons on the key board.

REC : The titles, time, date and stopwatch can be displayed on the camera picture by operation of buttons on the key board and they are recorded.

PRESET : The titles, time and date can be preset by the buttons on the key board prior to the recording.

42 Function Panel for Buttons on Key Board
It explains function of each button on the key board.
The function of buttons are changed by the position of the Key Board Selection Switch 41 and indicated by LEDs on the panel.



43 Key Board

Panasonic specified VTR such as AG-2400 is remotely controlled by operation of buttons on this board. The buttons on this board also display the titles, time, date and stopwatch on the camera picture.

44 Total Pedestal Control (TOTAL PEDESTAL)

This control can adjust the pedestal level of video signal (luminance) for matching the pedestal level of more than two cameras in the system. Use the waveform monitor or oscilloscope for precise adjustment.

Note : It is not functional when the RCU is used.

45 Red Pedestal Control (R PEDESTAL)

Black balance can be adjusted by this control and the Blue Pedestal Control 46. Use the waveform monitor or oscilloscope for precise adjustment.

46 Blue Pedestal Control (B PEDESTAL)

Black balance can be adjusted by this control and the Red Pedestal Control 45. Use the waveform monitor or oscilloscope for precise adjustment.

47 Subcarrier Phase Coarse Switches for Gen-Lock

The subcarrier phase of camera signal is adjusted from 0° to 360° in 90° step with these switches as shown below for matching the phase of subcarrier signal at the Gen-Lock Input Connector 38.

Subcarrier Phase Coarse Switch Selection

SC Phase	0°	90°	180°	270°
Position of Switches	1 □ 3 □ 2 ■ 4 ■	1 □ 3 ■ 2 ■ 4 □	1 ■ 3 □ 2 □ 4 ■	1 ■ 3 ■ 2 □ 4 □

48 Horizontal Phase Control for Gen-Lock (H-PHASE)

The horizontal phase of camera signal is adjusted to match the H phase of the signal at the Gen-Lock Input Connector 38.

49 Subcarrier Phase Fine Control for Gen-Lock (SC-PHASE)

This control allows fine adjustment of the subcarrier phase set by the Subcarrier Phase Coarse Switch 47. It gives continuous control of up to plus 90° subcarrier phase to match the phase of subcarrier signal at the Gen-Lock Input Connector 38.

50 Backup Battery Compartment

The backup battery (SUM-3, AM-3 or AA size) is installed into this compartment to backup the titles, time, date and automatically set white balance even when the camera power is turned OFF.

51 Tally ON/OFF Switch (TALLY ON/OFF)

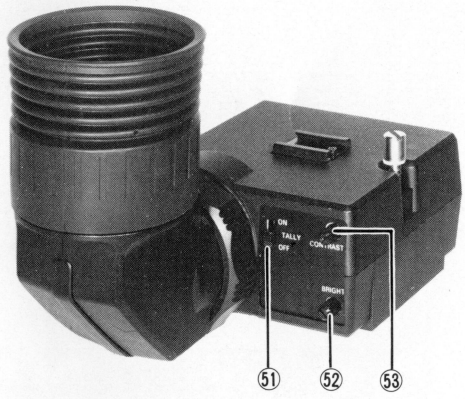
This switch turns ON/OFF the tally lamp 3 located in front of the viewfinder.

52 Brightness Control (BRIGHT)

Turn this control clockwise to increase the picture brightness in the viewfinder.

53 Contrast Control (CONTRAST)

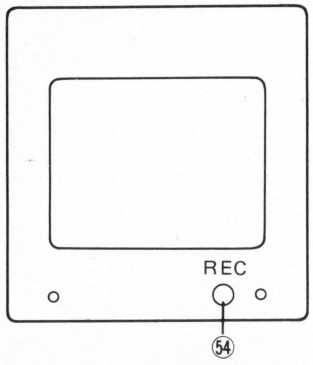
Turn this control clockwise to increase the picture contrast in the viewfinder.



54 Recording/Tally Indicator (Red) (REC)

When the camera is used with the Panasonic portable VTR and the VTR start/stop button on the zoom lens or side of camera is pressed, this LED lights to indicate the recording mode as well as the blinking graphics REC on the EVF screen.

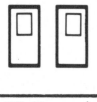
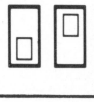
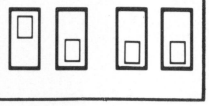
This LED is also operated when this camera is used in full system operation with optional remote control unit (RCU) and special effects generator to indicate to the camera operator that the camera is actually shooting the scene.



55 Vertical Blanking Width Selection Switch

Refer for resetting the switch to qualified service personnel.

The vertical blanking width can be set by these switches individually as shown below.

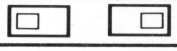
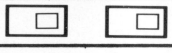
V. Blanking Width	19H	20H	21H
Position of Switches			

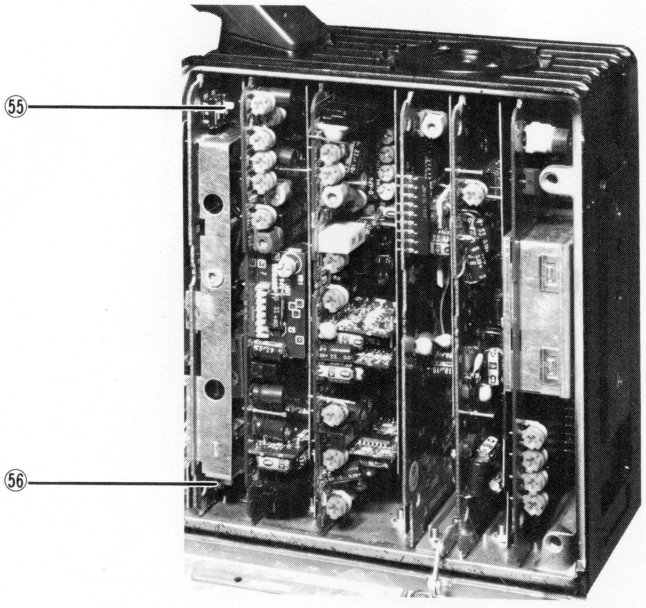
(1H = 1 line = 63.5μsec)

56 Horizontal Blanking Width Selection Switch

Refer for resetting the switch to qualified service personnel.

The horizontal blanking width can be set by these switches individually as shown below.

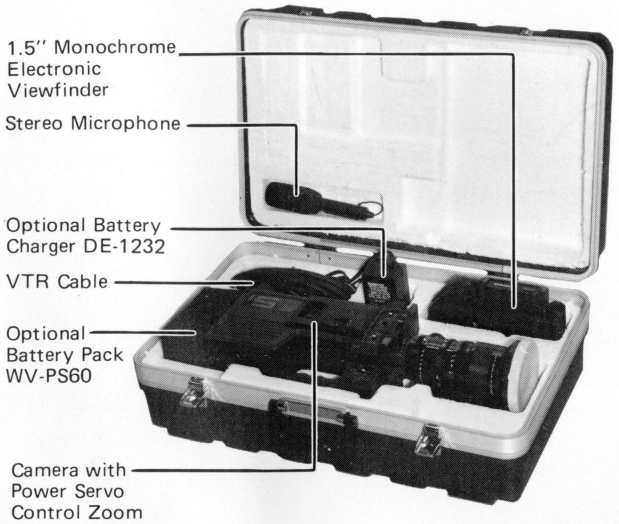
H. Blanking Width	10.7μsec	10.8μsec
Position of Switches		
H. Blanking Width	10.9μsec	11.1μsec
Position of Switches		



ENG Carrying Case

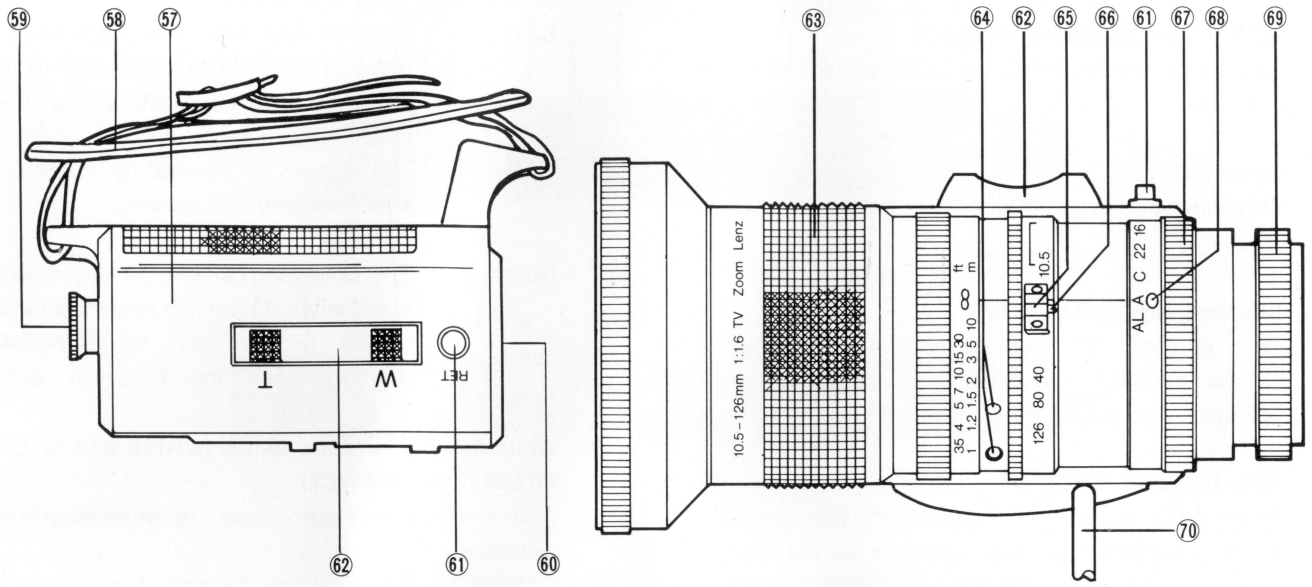
The ENG color camera WV-6000 is packed into the ENG carrying case as shown below.

The optional accessories can also be packed into it.



MAJOR OPERATING CONTROLS

Auto Iris Power Servo Control Zoom Lens WV-LZ12/12



Auto Iris Power Servo Control Zoom Lens WV-LZ12/12

57 Power Servo Zoom Unit

This is a control unit for the power servo zoom of the lens.

58 Hand Strap

This hand strap is for securely holding the camera. The length of the hand strap can be adjusted.

59 Servo/Manual Zoom Select Knob

The power servo zoom control or manual zoom control can be selected by setting this knob.

* For power servo control zoom, push the knob to SERVO position.

* For manual zoom control, pull the knob to MANUAL position.

When using the studio conversion kit, this knob should be set to the MANUAL position.

60 VTR Start/Stop Button

This button is used to start or pause the recorder. Press the FWD/PLAY and REC buttons on the recorder. Press the Start/Stop Button once to record and press again to pause. The recording/tally indicator on the viewfinder lights and the blinking graphics REC is displayed in the EVF when the recording is in progress. This button is useful only when the VTR cable is actually connected to the Panasonic portable color VTR.

61 Return Video Button

When the auxiliary signal such as effected signal from a special effects generator is supplied to the auxiliary connector of the remote control unit (RCU) in the system operation, the lineview signal is displayed on the viewfinder while this button is being pressed.

When the Panasonic 3/4" U-vision portable VTR with 14-pin camera input connector NV-9450 is in the playback mode, the playback picture is seen by pressing this button.

62 Power Servo Zoom Control (W/T)

The 12:1 zoom lens can be controlled by pressing this control to zoom in/out for tele/wide picture with motor drive.

63 Focus Ring

Turning the ring located on the lens will change the lens focus. Focusing the lens of the camera will change the viewfinder picture. To be sure the object is in focus, observe the picture on your viewfinder and adjust the focus ring.

With optional studio conversion kit, the focus can be remote-controlled by the flexible cable and focus controller.

64 Mounting Hole for Studio Conversion Kit WV-LK11

Studio Conversion Kit WV-LK11 which remotely controls the zoom and focus of power servo control zoom lens is mounted using these holes.

65 Zoom Ring/Lever

For Manual Zooming :

* By pulling the Servo/Manual Zoom Select Knob 59 to the MANUAL position, the picture size can be manually magnified 12 times with the use of zoom ring/lever. Just rotate the zoom ring for close-up(Tele) or wide angle(Wide) picture.
* With optional studio conversion kit, the power zoom can be controlled remotely.

For Power Zooming :

* By pushing the Servo/Manual Zoom Select Knob 59 to the SERVO position, the 12:1 zoom lens allows you to zoom in/out for closer(tele)/wider picture with motor drive, which is activated by the Power Servo Zoom Control 62.

66 Macro Knob

For close-up picture, set the lens to the macro function by pushing this knob after setting (pulling) the Servo/Manual Zoom Select Knob 59 to the MANUAL position. The camera can shoot objects at a distance as close as 5 cm (2").

CAUTION : (1) Do not zoom the lens during macro function. You will lose focus, because during macro function the backfocus of the lens is changed.

(2) The macro function will be automatically released when zooming the lens.

67 Iris Ring

* The iris indicators on the lens are as follows; 1.6, 2, 2.8, 4, 5.6, 8, 11, 16, 22, C, A, AL
* The iris indicators 1.6 - 22 and C(close) show the iris opening.
* The iris indicator A is incorporated in auto mode for iris opening.
  To set the iris to the A position or release the iris from A position, rotate the iris ring while pressing the Pin Button 68.
* The iris indicator AL position locks the iris opening set at A position. To set the iris to the AL position or release the iris from the AL position, rotate the iris ring while pressing the Pin Button 68.
* When using the RCU, the lens iris should be set to the A position.

68 Pin Button

To set the lens iris to the A or AL position or release the lens iris from the A or AL position, rotate the iris ring while pressing this button.

69 Lens Mounting Ring

When mounting the lens onto the camera, rotate this ring clockwise (view from the front) after engaging the mounting guide on the lens and the camera. Rotate it counterclockwise for removal.

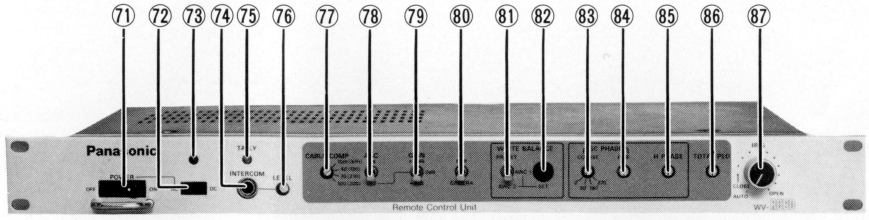
70 Lens Cable with 12-pin Connector

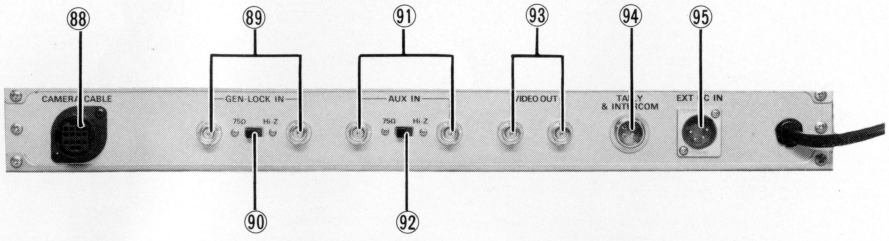
This cable provides the power for power servo control zoom motor and the iris control signal which automatically adjusts incoming light intensity falling on the pick-up tube by changing the lens iris.

MAJOR OPERATING CONTROLS

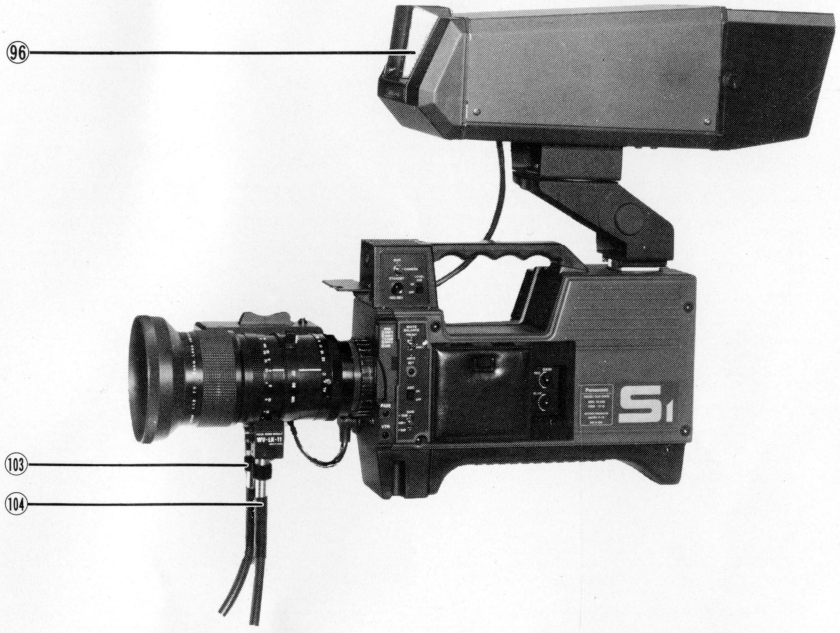
Studio Camera System/Main Optional Accessories

- **Remote Control Unit (RCU) WV-RC60**

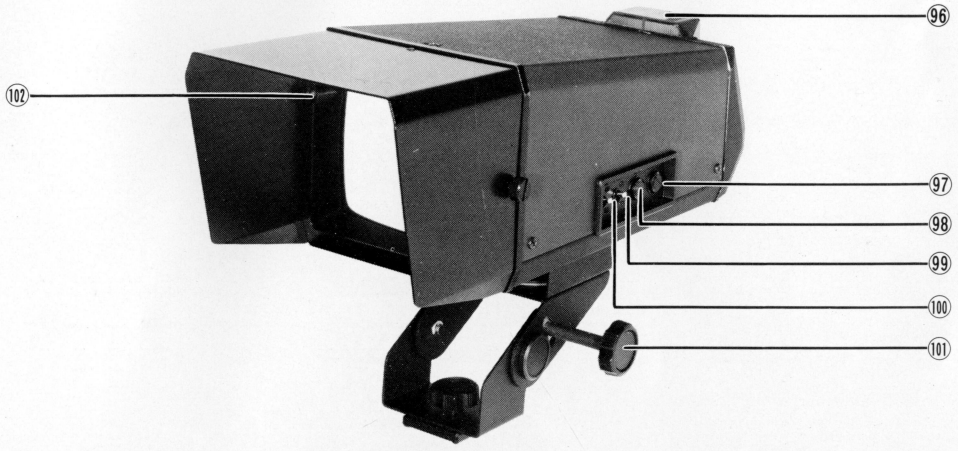




- **Studio Camera**



- **5″ Monochrome Electronic Viewfinder WV-VF65**



Optional Remote Control Unit (RCU) WV-RC60

71 Power ON/OFF Switch (POWER ON/OFF)
This switch activates power for the RCU when the RCU is operated with AC power mode.

72 AC/DC Selection Switch (AC/DC)
This switch selects the AC or DC power source for the RCU.

73 Power Indicator
This indicator turns on whenever the unit is operated.

74 Intercom Jack (INTERCOM)
This is used for intercommunication between camera operator and RCU operator in system operation with special effects generator.

75 Tally Indicator (TALLY)
When RCU is used in conjunction with special effects generator, the tally indicators on the viewfinder and RCU indicate to the camera operator, RCU operator and other people that this camera system is actually shooting the scene.

76 Intercom Level Control (INTERCOM LEVEL)
Turn this control to have optimum sound level for the headset connecting to the intercom jack 74.

77 Cable Length Compensation Switch (CABLE COMP)
This switch is used for 14-pin studio cable compensation between the camera head and RCU as;

10m (30ft) :	Cable length less than 10m (30ft)
40m (120ft) :	Cable length 10-40m (30-120ft)
70m (210ft) :	Cable length 40-70m (120-210ft)
100m (300ft) :	Cable length 70-100m (210-300ft)

78 AGC ON/OFF Switch (AGC ON/OFF)
The automatic gain control (AGC) can be selected ON or OFF as;

ON position : The high sensitivity at low illumination is desired.

OFF position : The natural picture at low illumination is desired. At this position, the video output amplitude can be increased +6dB or +12dB by setting the High Gain Selection Switch 79.

79 High Gain Selection Switch (GAIN +6dB/0dB/+12dB)
This switch is functional when the AGC ON/OFF Switch 78 is set to the OFF position.
Normally set this switch to the 0dB position. +6dB or +12dB position increases the video output amplitude which is approximately equivalent to opening the lens iris one or two F stops.

80 Color Bar/Camera Selection Switch (BAR/CAMERA)
When used in a system, this switch can select the camera mode or color bar mode.

BAR : The full field color bar (75% amplitude, 77 IRE white) is provided from the video output connectors 93 on the RCU.

CAMERA : The system is in operating condition after necessary adjustments.

Note : The Color Bar/Camera/Standby Selection Switch 11 on the camera should be set to the BAR or CAMERA position when the RCU is used.

81 White Balance Selection Switch (WHITE BALANCE PRESET/AWC1/AWC2)
This switch selects operational condition of white balance as;

PRESET : Proper white balance is reproduced when the camera is aimed at the object illuminated by 3200°K color temperature light and the Filter Wheel 15 is set to the position 1.

AWC1 : The white balance can be set automatically at this position. While aiming the camera at a white object such as white wall or paper, press the White Set Button 82 momentarily to activate the automatic white balance setting.
The white balance is automatically set within approximately 2 seconds.
The WHITE graphics is blinking to indicate the white balance setting and it disappears when the white balance setting is completed. If the blinking WHITE graphics remains, reset the white balance after confirming the object and position of Filter Wheel 15 referring to the Table on page 45.
The white balance set at this position is held for approximately one year by a backup battery even after power switch is turned OFF. Therefore if the color temperature of the object/scene condition remains same, it is unnecessary to reset the white balance.
When the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.

AWC2 : The white balance can be set automatically same as the AWC1 position.

Note : (1) The white balance for 2 differing light conditions such as indoor and outdoor light can be preset using two setting positions (AWC1 and AWC2) prior to actual recording.

(2) The Red and Blue Gain Control 23 & 24 on the camera should be set at the center detent position.

82 White Set Button (WHITE BALANCE, SET)

The white balance can be set by pressing this button while aiming the camera at the white object when the White Balance Selection Switch 81 is placed to the AWC1 or AWC2 position.

The white balance setting will be necessary when the WHITE graphics is blinking in the EVF.

The white balance setting will also be necessary when the camera is panned from indoor to outdoor or vice versa. In this case, the blinking WHITE graphics is not displayed.

Aim the camera at the white object such as white wall or paper and press this button momentarily to automatically activate the white balance setting. After approximately 2 seconds, the white balance setting is completed and the blinking WHITE graphics in the EVF will disappear.

If the blinking WHITE graphics remains, reset the white balance after confirming the object and the position of Filter Wheel 15 referring to the Table on page 45.

Note : (1) The white balance setting should be done at the center detent position of the Red and Blue Gain Control Knob on the camera.

(2) The white balance may not be properly balanced under low illuminations when the EVF of the camera displays the blinking LIGHT graphics.

(3) It is recommended that the white balance should be set after a few minutes warm-up period.

(4) Even if the white object can not be found, the acceptable white balance setting can be made by aiming the camera at a whitish object and capping the lens with an attached white lens cap.

83 Subcarrier Phase Coarse Switch for Gen-lock (SC PHASE COARSE)

The subcarrier phase of the camera signal is adjusted from 0° to 360° in 90° step with this switch for matching the phase of burst signal at the gen-lock connector 89.

84 Subcarrier Phase Fine Control for Gen-lock (SC PHASE FINE)

This control allows fine adjustment of the subcarrier phase previously set by the Subcarrier Phase Coarse Switch 83. It gives continuous control of up to plus 90° subcarrier phase to match the phase of burst signal at the gen-lock connector 89.

85 Horizontal Phase Control for Gen-lock (H PHASE)

The horizontal phase of the camera signal is adjusted to match the horizontal phase of the signal at the gen-lock connector 89.

86 Total Pedestal Control (TOTAL PED)

This control can adjust the pedestal level of video signal (luminance). Turn this control clockwise (or counterclockwise) to increase (or decrease) the pedestal level. At the center position, the pedestal level is preset to the standard level.

87 Lens Iris Control (IRIS AUTO-CLOSE/OPEN)

This control selects the operational condition of auto iris power servo control zoom lens as;

AUTO : The iris level of auto iris power servo control zoom lens on the camera head is automatically controlled.

CLOSE/OPEN : The iris level of auto iris power servo control zoom lens on the camera can be manually controlled by turning this control.

Note : The Iris Ring 67 on the auto iris power servo control zoom lens should be set to the A position.

88 14-pin Camera Cable Connector (CAMERA CABLE)

14-pin Camera/Studio Cable is connected between the camera head and RCU in the system operation.

89 Gen-lock Input Connector (BNC) (GEN-LOCK IN)

These connectors are used to supply the black burst signal or NTSC composite signal from the system reference.

Two connectors are convenient for bridging or looping through application.

90 Gen-lock Input Termination Switch (75 ohms/Hi-Z)

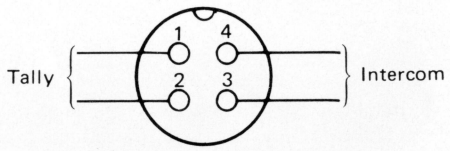
When bridging or looping through the gen-lock signal, set this switch to the Hi-Z position. Otherwise, set to 75 ohms position.

91 Auxiliary Input Connector (BNC) (AUX IN)
These connectors are used to supply the effected signal from the special effects generator. The effected picture can be seen on the viewfinder while pressing the Return Video Button 61 on the lens. Two connectors are convenient for bridging or looping through application.

92 Auxiliary Input Termination Switch (75 ohms/Hi-Z)
When bridging or looping through the auxiliary signal, set this switch to the Hi-Z position. Otherwise, set to 75 ohms position.

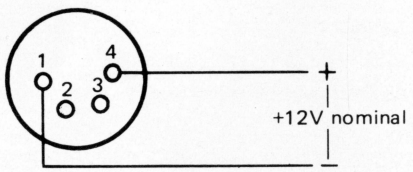
93 Video Output Connectors (BNC) (VIDEO OUT)
These connectors are used to provide the NTSC composite video output signals to the special effects generator, the video monitor or VTR.

94 Tally and Intercom Input Connector (TALLY & INTERCOM)
The 4-pin cable is connected between this connector and the tally/intercom output of the special effects generator.



95 4-Pin External DC Input Connector (EXT DC IN)
This connector is used for connecting a cable from an external DC power source (a belt type battery or a car battery for example). Maximum voltage can be supplied is 22V DC.

Cable Length	DC Power Source
10m (30ft)	More than 12V, 2A
40m (120ft)	More than 15V, 1.8A
70m (210ft)	More than 18V, 1.6A
100m (300ft)	22V, 1.4A



CAUTION : Use with a DC power supply marked Class 2.
Do not use with an external storage battery unless provided with a fuse rated at 8 amps or less and located within 5 inches of the battery connecting means.

Optional 5" Viewfinder WV-VF65

96 Tally Lamp
This tally lamp is operated only when this unit is used in full system operation with optional RCU and special effects generator. The tally lamp indicates the camera operator and other people that this camera system is actually shooting the scene.

97 Contrast Control (CONTRAST)
Turn this control clockwise to increase picture contrast only in the viewfinder.

98 Brightness Control (BRIGHT)
Turn this control clockwise to increase picture brightness only in the viewfinder.

99 Tally ON/OFF Switch (TALLY ON/OFF)
This switch turns ON/OFF the tally lamp 96 located on front of the viewfinder.

100 Peaking ON/OFF Switch (PEAKING ON/OFF)
This switch is set to the OFF position in the normal operating condition. When the camera is aimed at a weakly illuminated scene, set the switch to the ON position so that focusing of picture in the viewfinder is easily made.

101 Viewfinder Adjusting Knob
The angle of optional 5" viewfinder can be adjusted for easy viewing.

102 Tally Indicator
This tally indicator indicates the camera operator that this camera system is actually shooting the scene and sent to the line output when this unit is used in full system operation with the RCU and special effects generator.

Optional Studio Conversion Kit WV-LK11

103 Flexible Cable for Zoom Controller
The zooming of auto iris power servo control zoom lens can be remote-controlled for studio operation by installing the gear box, flexible cable and zoom remote controller to the lens.

104 Flexible Cable for Focus Controller
The focus of auto iris power servo control zoom lens can be remote-controlled for studio operation by installing the flexible cable and focus controller to the lens.

INSTALLATION FOR ENG/EFP OPERATION

A. WV-6000 ENG Color Camera

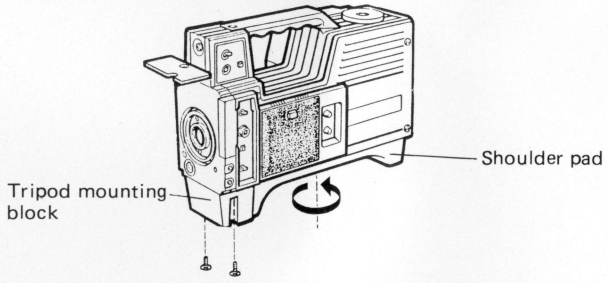
WV-6000 ENG color camera is packed into a carrying case. For safe transportation, viewfinder and microphone are not mounted on the camera head and are packed separately into the carrying case. Follow the steps 3 to 5 for assembly.

B. Studio Configuration with Optional Accessories

The ENG/EFP Color Camera can be assembled with the camera head WV-6000H or the camera head of studio configuration WV-6000ST, 1.5" monochrome viewfinder WV-VF60 or 1.5" color viewfinder WV-VF61, 12:1 auto iris power servo control zoom lens WV-LZ12/12, microphone WV-MC60, shoulder pad WV-Q40A and battery pack WV-PS60. Follow the steps 1 to 5 for assembly.

1. Installing Shoulder Pad WV-Q40A

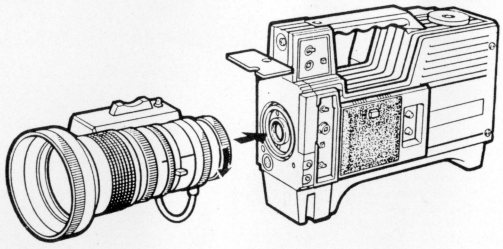
Install the tripod mounting block with two screws and the shoulder pad with one screw.



2. Mounting Lens WV-LZ12/12

Remove the body cap by pulling it. Attach the optional 12:1 auto iris power servo control zoom lens WV-LZ12/12 into the lens mount and turn the lens mounting ring on the lens clockwise to hold the lens securely.

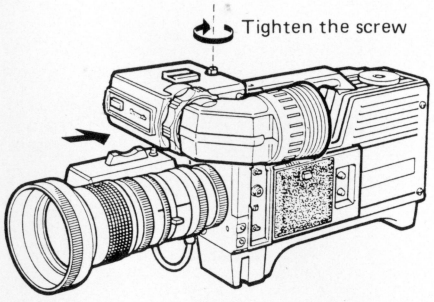
Connect the lens cable to the lens connector.



3. Mounting Viewfinder

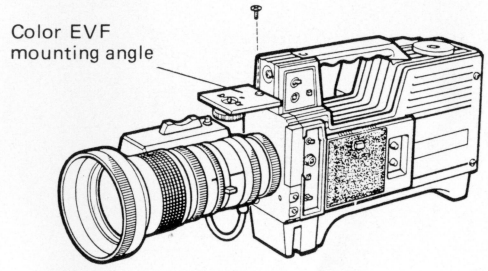
* In case of 1.5" monochrome viewfinder WV-VF60

Attach the viewfinder on the front portion of the camera head and fasten with the fixing screw.

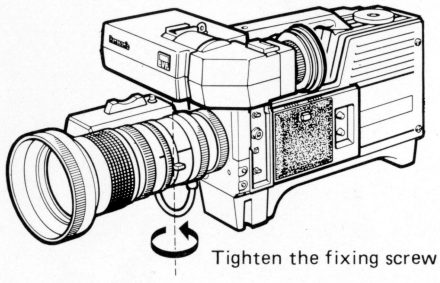


* In case of 1.5" color viewfinder WV-VF61

Install a color EVF mounting angle by fixing one screw.

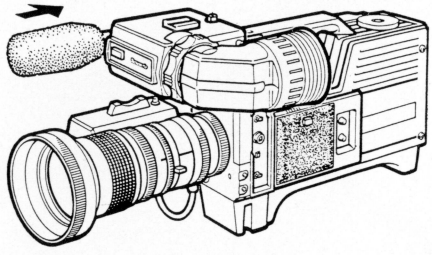


Install the color EVF on the EVF mounting angle and tighten it with a fixing screw.



4. Mounting Stereo Microphone with Wind Screen WV-MC60

Install the microphone at the side of viewfinder by sliding it into a microphone holder and connect the microphone cord to the microphone connector.

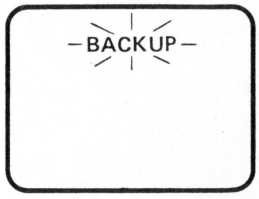


5. Mounting Battery Pack WV-PS60

Refer to INSTALLATION OF BATTERY PACK on page 21.

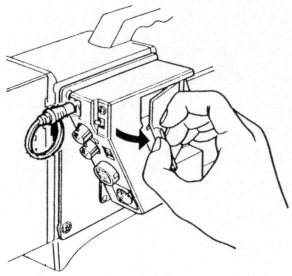
INSTALLATION OF BACKUP BATTERY

One piece of the SUM-3, AM-3 or AA size dry battery is used as a backup battery for the white balance and the graphics display of Title, Date and Time.
When the blinking graphics BACKUP is displayed in the EVF, the installation or replacement of backup battery is required.

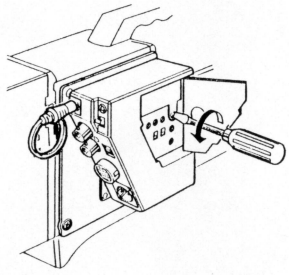


Install the battery after turning OFF the power switch.

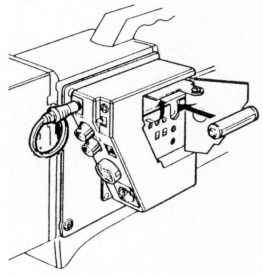
1. Open the cover for fine-adjustment controls.



2. Loosen the fixing screw for the backup battery compartment by the flat type screwdriver and open the compartment.



3. Check the position/polarity of the battery and install the battery into the compartment properly.

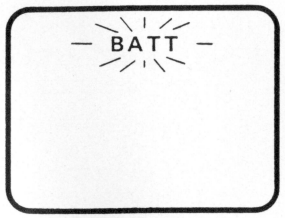


4. Put the cover back and tighten the screw.

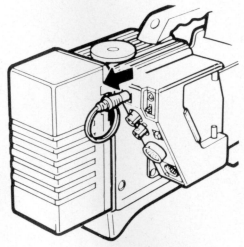
Note : The new battery operates for one year. Some battery may operate less than one year since it has been already discharged and becomes low level.

INSTALLATION OF BATTERY PACK

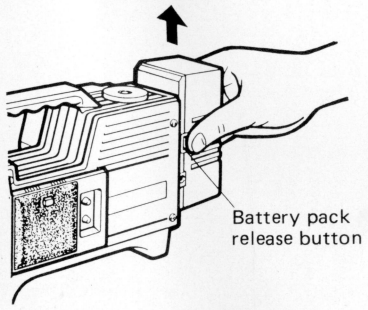
When the battery pack WV-PS60 is used with the ENG/EFP color camera, the following installation procedure should be followed.
When the blinking graphics BATT is displayed in the EVF, replace or recharge the battery pack.



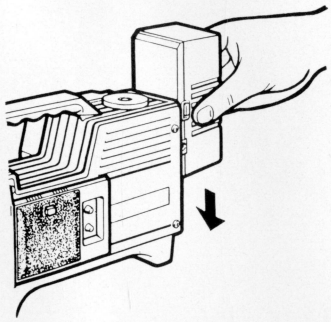
1. Disconnect the battery cord from the battery connector.



2. Remove the battery pack from the camera by sliding it up while pressing the battery pack release button.



3. Install the new battery pack to the camera by sliding it down until it stops after engaging the mounting mechanism on the rear chassis of camera and battery pack.

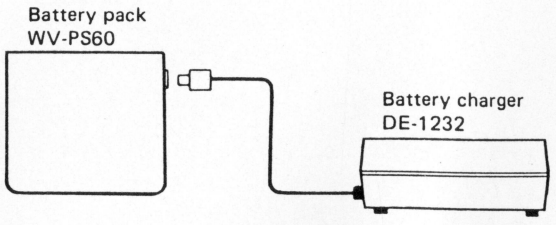


4. Connect the battery cord to the battery connector.

Note : The new battery operates for two hours. Some battery pack may operates less than two hours since it has been already discharged and becomes low level.

CHARGE OF BATTERY PACK WV-PS60

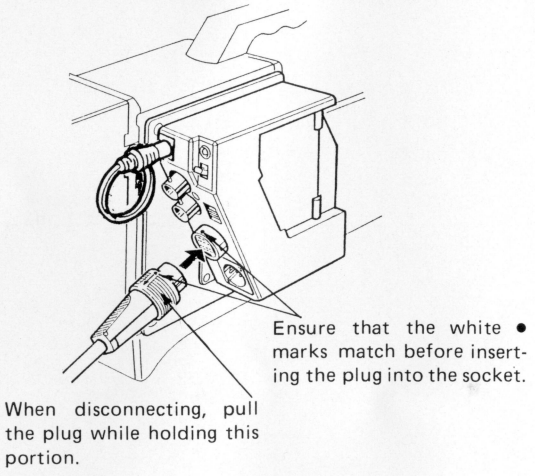
The battery pack WV-PS60 can be charged by the battery charger DE-1232.



Caution : (1) It is recommended to charge the battery pack for approximately 14 hours (not more than 24 hours) for longer life.
(2) Remove the battery pack from the camera when charging.

VTR CABLE CONNECTION

Connect the VTR cable to the 14-pin VTR/RCU Connector.


Ensure that the white • marks match before inserting the plug into the socket.
When disconnecting, pull the plug while holding this portion.

INSTALLATION FOR STUDIO OPERATION

A. Conversion from ENG Camera

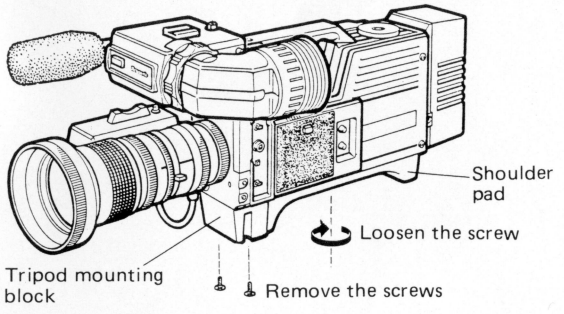
The studio camera can be converted from the ENG camera and outfitted with optional 5" viewfinder WV-VF65, RCU WV-RC60 and studio conversion kit WV-LK11 for 12:1 auto iris power servo control zoom lens WV-LZ12/12. To do that , follow the procedure from step 1 to 8.

B. Studio Configuration

The studio camera is assembled with studio configuration WV-6000ST which consists of a camera, 5" viewfinder, RCU, 12:1 auto iris power servo control zoom lens and studio conversion kit. Follow steps 5 to 8.

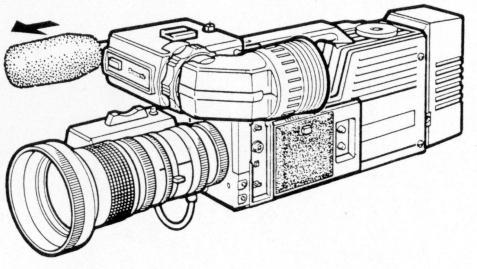
1. Disassembling Shoulder Pad and Tripod Mounting Block

Remove the shoulder pad by loosening the fixing screw and the tripod mounting block by removing two fixing screw.



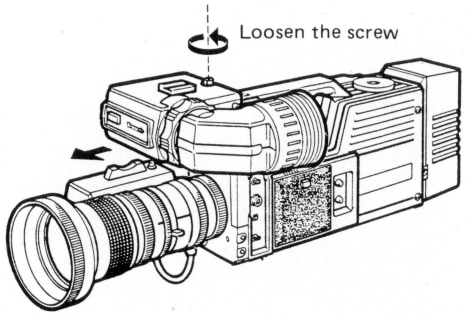
2. Disassembling Microphone

Disconnect the mic connector from the stereo microphone input connector and remove the microphone by pulling it from the mic holder.



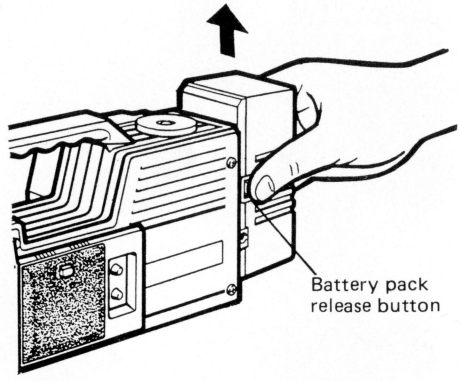
3. Disassembling 1.5" Viewfinder

Loosen the screw on the top of the camera. Pull out the viewfinder by sliding out toward the front of the camera after disconnecting the viewfinder connector.



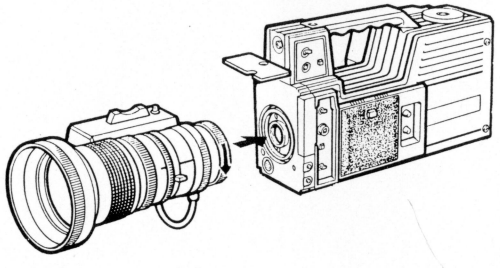
4. Disassembling Battery Pack

* Disconnect the battery cord from the battery connector.
* While pushing the battery pack release button, remove the battery pack by sliding it up.



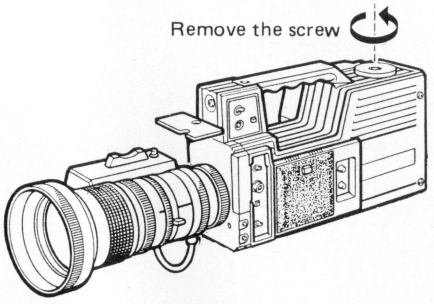
5. Mounting Lens for WV-6000ST

Remove the body cap by pulling it. Attach the auto iris power servo control zoom lens into the lens mount and turn the lens mounting ring on the lens clockwise to hold the lens securely. Connect the lens cable to the lens connector.

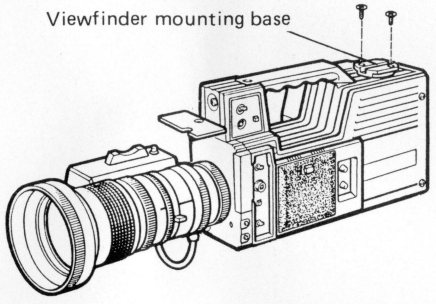


6. Mounting 5" Viewfinder

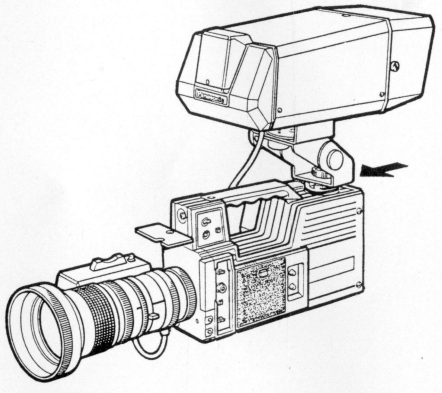
* Remove the viewfinder mounting cover from the top of the camera head by removing the screw.



* Attach the round viewfinder mounting base to the top of the camera with two screws. It comes with the 5" viewfinder.

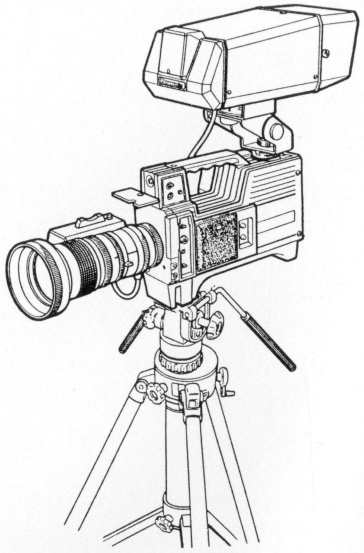


* Slide the viewfinder adjusting angle into the mounting base and tighten the fixing knob to secure the viewfinder. Connect the viewfinder connector.



7. Mounting Camera on a Tripod

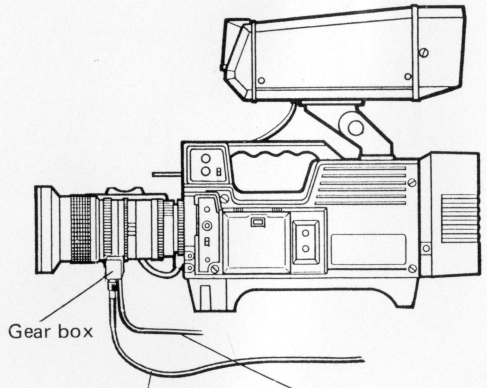
Mount the camera onto the tripod by screwing the mounting screw on the tripod into the mounting hole (standard N.C. 1/4 -20 thread) on the bottom of the camera.



8. Mounting Lens Control Kit

Install the gear box for focus control and zoom control at the bottom of the lens and connect the flexible cable with the focus controller and zoom controller to the gear box.

Install the zoom controller on the right tripod arm and the focus controller on the left tripod arm.

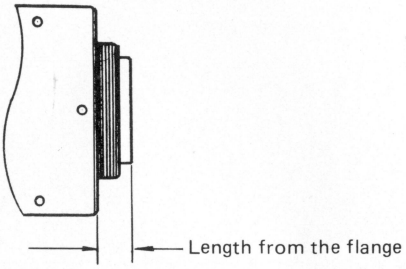


INSTALLATION OF C-MOUNT LENS

The C-mount lens which meets following specifications can be used with the WV-6000.

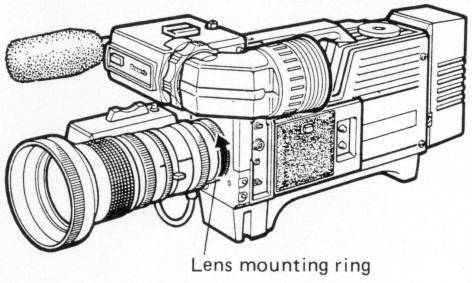
Type of lens : C-mount lens for 2/3" and 1" pick-up tube

Length from the flange : Less than 4.5 mm

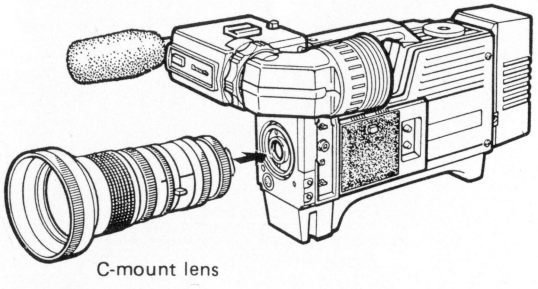


Change the lens to the C-mount type as follows.

1. Remove the 12:1 auto iris power servo control zoom lens WV-LZ12/12 from the camera by turning the lens mount ring on the lens counterclockwise.



2. Mount the C-mount lens onto the camera by turning the lens.



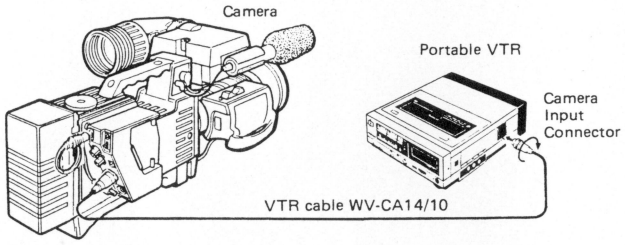
CONNECTIONS FOR ENG/EFP APPLICATIONS

CAUTION : Keep the power switch on the camera in the OFF position during connection.

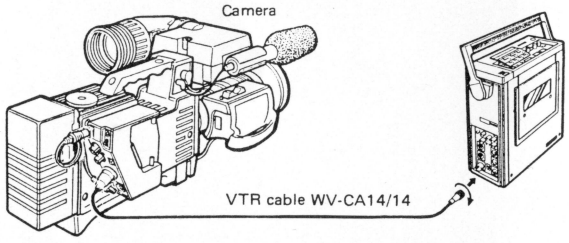
1. ENG Application

* Connect the VTR cable between the camera and the Panasonic portable color VTR (Standard VTR cable length is 10ft.)
* Keep the power OFF on the Panasonic portable color VTR during connection.

For Panasonic portable VTR AG-2400



For Panasonic portable VTR NV-9450



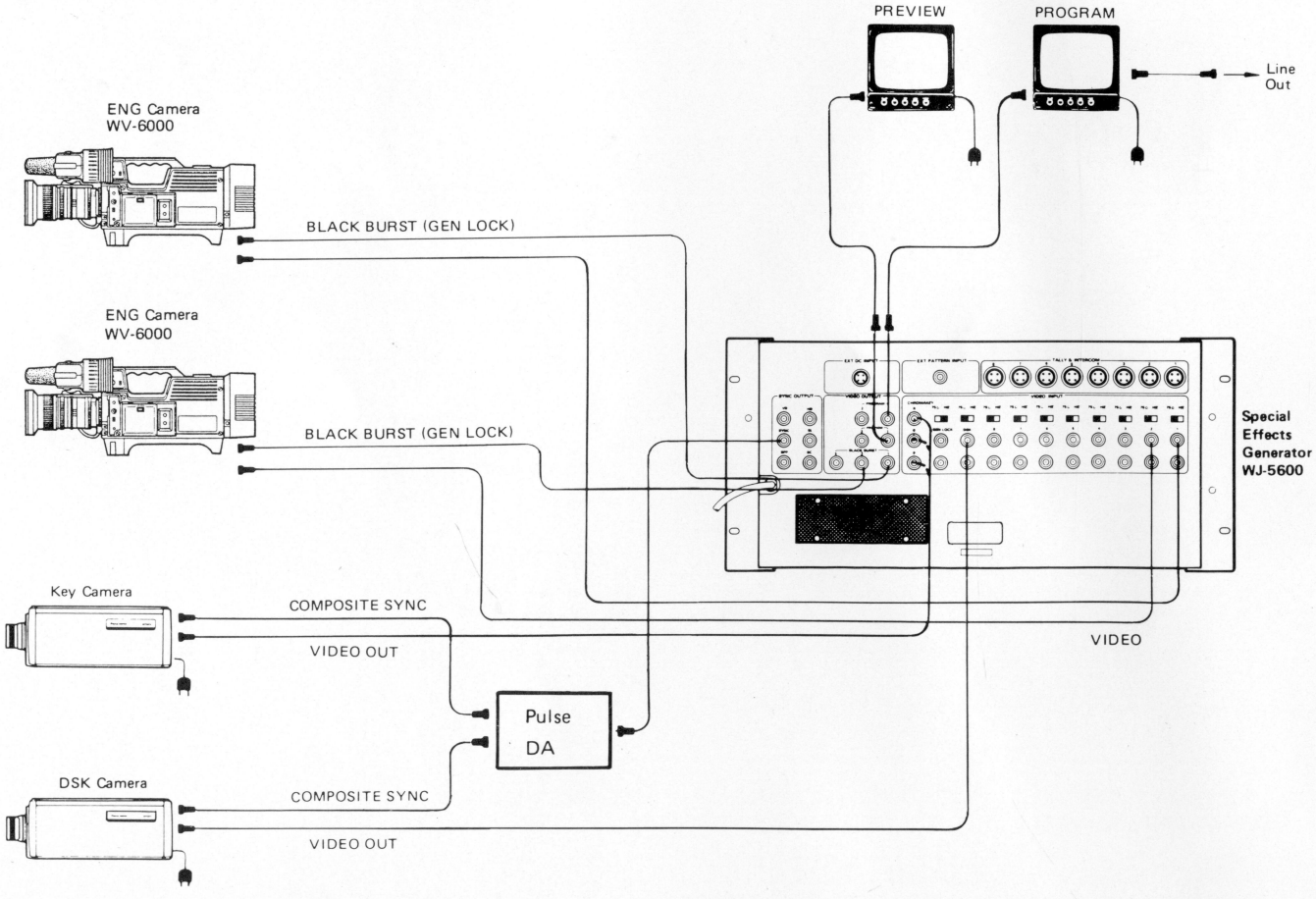
2. Gen-Lock EFP Application

* Connect the coaxial cable for gen-lock signal between the Gen-Lock Input Connector 38 (BNC type) on the camera and the black burst output connector on the production system.
* Connect the coaxial cable for NTSC output signal between the Video Output Connector 36 (BNC type) on the camera and the video input connector on the production system.

Note : (1) The following signal outputs can be used as gen-lock signals; WJ-5600, WJ-5500A/B, WJ-4600A/B : Black burst output

(2) The black burst output should be synchronized to system reference

(3) Refer to the operating instructions of the special effects generator such as WJ-5600, WJ-5500A/B, WJ-4600A/B.

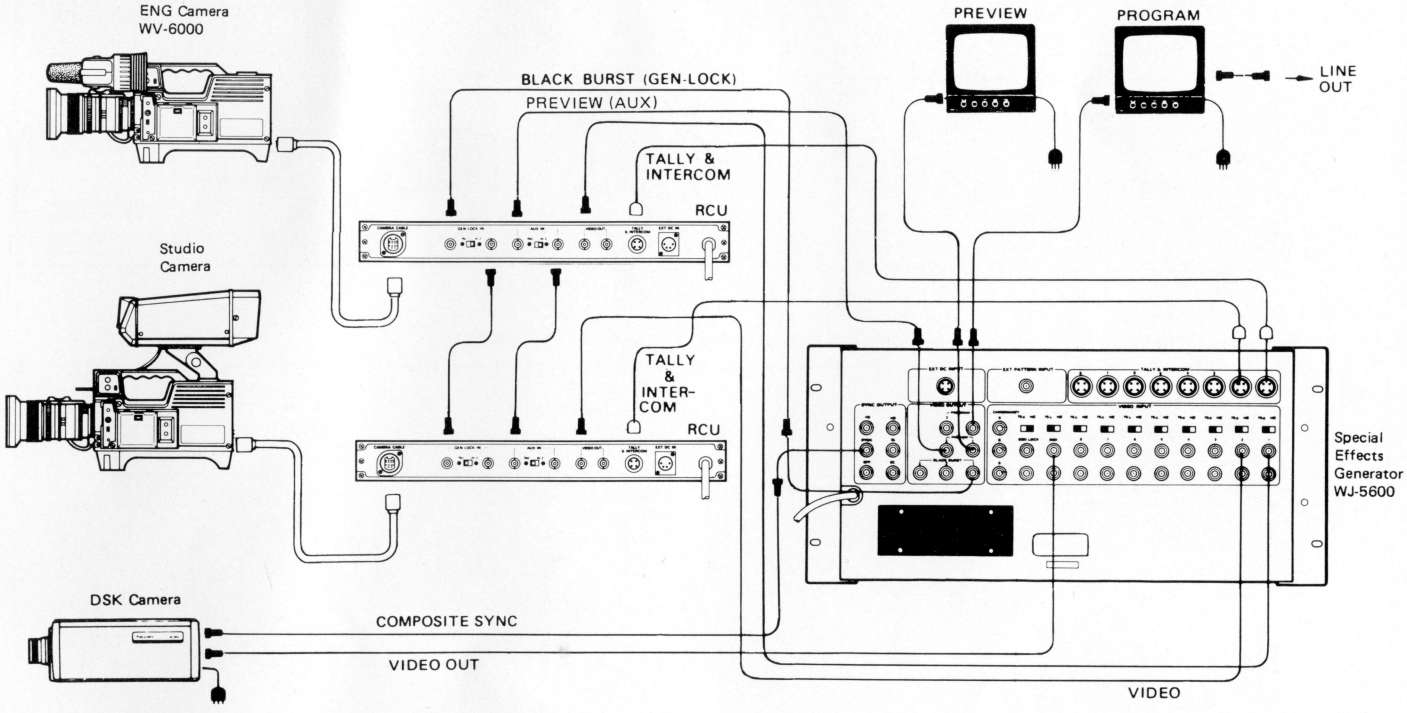


3. Gen-Lock EFP with RCU Application

* Connect the 14-pin studio cable between the camera head and RCU.
* Connect the coaxial cable for NTSC output signal between the Video Output Connector 93 on the RCU and the video input on the production system.
* Connect the coaxial cable for gen-lock signal between the black burst output on the production system and the Gen-Lock Input Connector 89 on the RCU (which may be bridged or looped through to another RCU).
* Connect the coaxial cable for lineview signal between the effect/preview output on the production system and the Auxiliary Input Connector 91 on the RCU (which may be bridged or looped through to another RCU).

Note : (1) The tally and intercom among the camera head, RCU and special effects generator will function only when the 4-pin cable for tally and intercom is connected between RCU and S.E.G.

(2) The 14-pin studio cable can be extended for a maximum distance of 100m approximately 300ft). Cable length compensation switch 77 on the RCU should be set to the appropriate position according to cable length.



CONNECTION FOR STUDIO APPLICATIONS

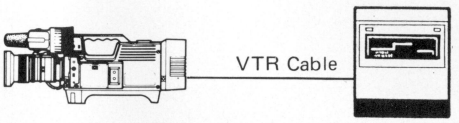
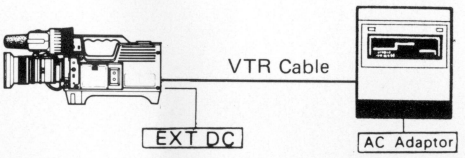
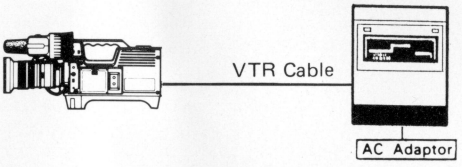
- The studio cameras with RCU are connected according to the same scheme as for gen-lock EFP with RCU application when these studio cameras are used in a production system.

OPERATING PROCEDURE FOR ENG/EFP APPLICATIONS

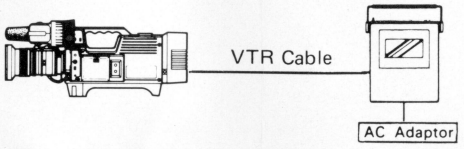
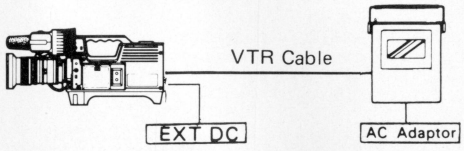
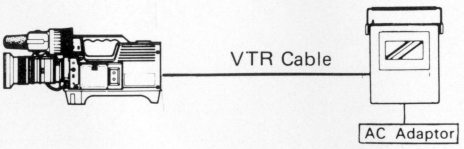
1. ENG Application

1) Make all the required connections.
2) Remove the lens cap.
3) Select the power source according to the table below.

For Panasonic portable VTR with 10-pin camera input connector such as AG-2400

Case No.	Camera Power	Portable VTR Power	VTR/RCU Selection Switch 37	Power Switch 35	Descriptions
1	Battery pack	Internal battery	10P-VTR	BATT/EXT	
2	External DC	Internal battery or AC adaptor	10P-VTR	BATT/EXT	
3	Supplied from VTR	AC adaptor	10P-VTR	VTR/RCU	

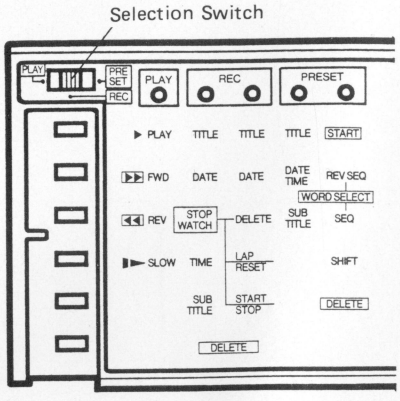
For Panasonic portable VTR with 14-pin camera input connector such as NV-9450

Case No.	Camera Power	Portable VTR Power	VTR/RCU Selection Switch 37	Power Switch 35	Description
1	Battery pack	Internal battery	14P-VTR	BATT/EXT	
2	External DC	Internal battery or AC adaptor	14P-VTR	BATT/EXT	
3	Supplied from VTR	AC adaptor	14P-VTR	VTR/RCU	

Note : 1. The cable distance between the camera and the VTR can be extended up to 23 m (70 ft).
2. It is not recommended to supply the camera power from the built-in battery in the portable VTR since the recording time is short.

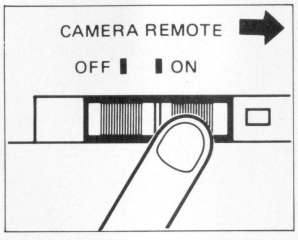
4) Turn both the camera and the portable VTR ON and set the portable VTR into the RECORD mode.

5) To prepare the portable VTR for camera recording, the following setting are necessary as;
Set the Key Board Selection Switch 41 to the REC position.



(a) For portable VTR with the Camera Remote Switch such as Panasonic portable VTR AG-2400

* Set the camera remote switch on the portable VTR to ON position.



(b) For other portable VTR without the Camera Remote Switch

* Press the Record and Play button together.

6) Select the proper filter according to color temperature using the Filter Wheel 15 referring to the table on page 45.

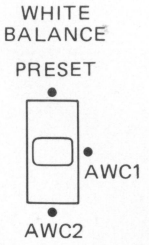
Note : When the camera is used under indoor illumination whose color temperature is 3200°K, the filter wheel should be set to No. 1.

7) Set the AGC ON/OFF Switch 19 to the ON position.

8) Set the Color Bar/Camera/Standby Selection Switch 11 to the CAMERA position.

9) Set the Iris Ring 67 on the auto iris power servo control zoom lens to the A(auto) position while pressing the Pin Button 68 on the lens.

10) Set the White Balance Selection Switch 21 to the AWC1 (or AWC2) position.

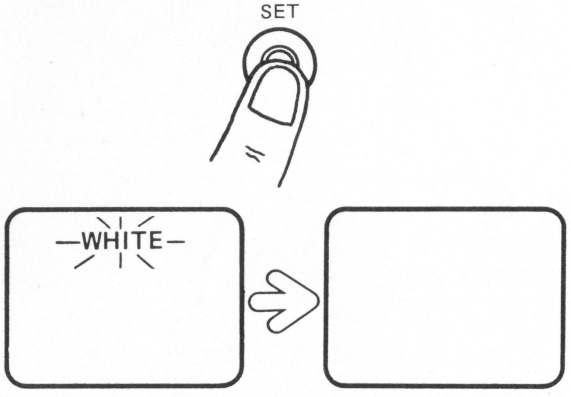


11) Aim the camera at the white balance set chart or a white object such as white paper or wall.

Note : 1. If the white object can not be found, aim the camera at the whitish object and cap the lens with the attached white lens cap.

2. When the lens iris must be set to the manual iris control mode, set the Level Indicator ON/OFF Switch 10 to the ON position and turn the lens iris so that it positions at a point where the white object is just before turning to the zebra pattern on the viewfinder.

12) Press the White Set Button 20 momentarily to automatically activate the white balance setting. The white balance is automatically set within approximately 2 seconds. The WHITE graphics is blinking to indicate the white balance setting and it disappears when the white balance setting is completed.
If the blinking WHITE graphics remains, reset the white balance after confirming the object and the position of Filter Wheel 15 referring to the Table on page 45.



Note : (1) The white balance setting should be done at the center (detent) position of the Red and Blue Gain Control Knob on the camera.

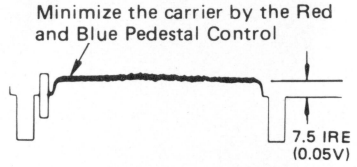
(2) The white balance may not be properly balanced under low illuminations when the EVF of the camera displays the blinking LIGHT graphics.

(3) It is recommended that the white balance should be set after a few minutes warm-up period.

(4) The white balance is held for a long period of time by the internal backup battery even after the power switch is turned OFF. Therefore, if the color temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance.
However, when the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.

(5) The black balance can be manually adjusted by the Red and Blue Pedestal Control 45 & 46. Use the waveform monitor or oscilloscope for precise adjustment.

(6) The total pedestal level can be adjusted by turning the Total Pedestal Control 44. The pedestal level should be set to 7.5IRE unit (0.05V).



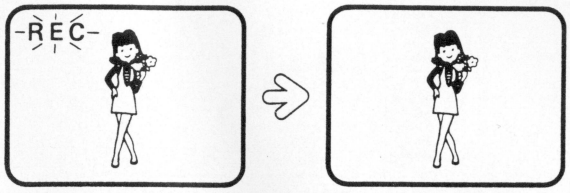
13) The white balance for different light condition/ color temperature can be set in advance by setting the White Balance Selection Switch 21 to the AWC2 (or AWC1) position and pressing the White Set Button 20 as in the case of previous setting.

14) Adjust the zoom lens with the Power Servo Zoom Control 62 or manual Zoom Ring/Lever 65 to have the desired picture composition.

15) Turn the Focus Ring 63 to get the best focus by watching the picture in the viewfinder.
For macro function : Set the Zoom Ring/Lever to macro range by turning while depressing the Macro Knob 66 after pulling the Servo/Manual Zoom Select Knob 59 to the MANUAL position for close up picture at distance as short as 5cm (2").

16) Press the VTR Start/Stop Button on the lens 60 or on the side of camera 17. The blinking graphics REC is displayed in the EVF and the Recording/ Tally Indicator 54 in the viewfinder lights as the recorder begins to record.

17) Press the VTR Start/Stop Button 60 or 17 to stop recording any time. The blinking graphics REC disappears and the Recording/Tally Indicator 54 turns OFF.

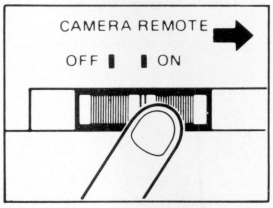


Press the button again to resume recording.

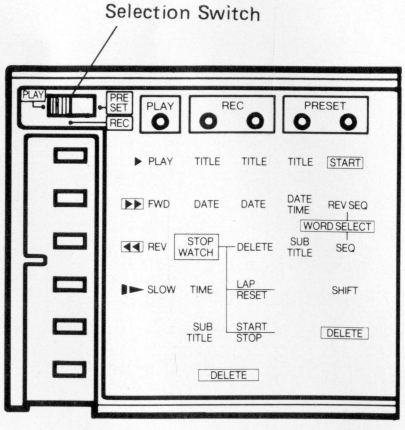
18) When the recording is finished and playback mode is desired, the following procedure are needed as;

(a) For portable VTR with the Camera Remote Switch such as Panasonic AG-2400 :

(1) Confirm that the Camera Remote Switch on the portable VTR is set to ON position.



(2) Set the Key Board Selection Switch 41 to the PLAY position.



(3) Press the desired button on the key board for the VTR playback.
See VTR Remote Control Playback Operation on page 44.

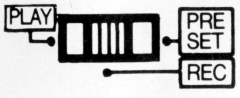
Note : When the Rec Review Button 13 on the camera is pressed after recording and the portable VTR is in pause mode, the portable VTR automatically rewinds and plays back the tape for approximately 2 seconds to make sure the recording conditions.

(b) For other portable VTR without the Camera Remote Switch
  (1) Depress STOP button on the recorder.
  (2) Then rewind the tape to the beginning of the recording.
  (3) Depress the PLAY button on the recorder and the playback can be observed on the viewfinder.

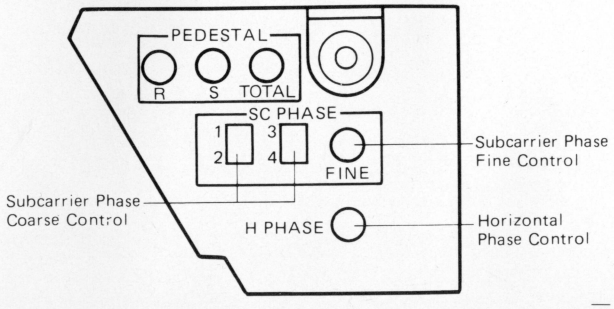
Caution : Do not aim the camera at excessively bright objects for a long time since the pick-up tube may be damaged. Also keep the microphone away from loud sounds (such as the speaker of the TV), since howling noise (feedback) may occur.

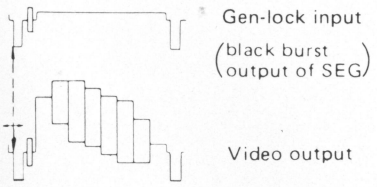
2. Gen-Lock EFP Application

1) Make all the required connections.
2) Set the VTR/RCU Selection Switch 37 to the 10P-VTR position.
3) Set the Power Switch 35 to the BATT/EXT position.
4) Set the Key Board Selection Switch 41 to the REC position.

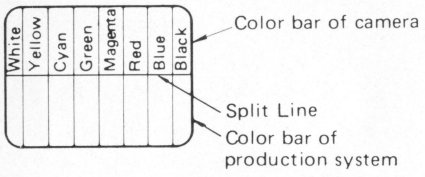


5) Set the Color Bar/Camera/Standby Selection Switch 11 to the BAR position.
6) Observe the gen-lock input and video output signals of camera using a dual-trace oscilloscope and adjust the Horizontal Phase Control 48 to match the phase of these signals. This control is located inside the fine adjustment cover.



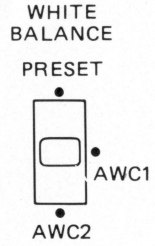


7) Observe the program color monitor output displaying the split picture of color bar of the camera and color bar of production system, and adjust the Subcarrier Phase Coarse Switch 47 and Fine Control 49 to match the hues. These controls are located inside the fine adjustment cover.



Note : 1. Precise adjustment should be done using a vectorscope.
Refer for the details to the operating instructions for the special effects generator.
2. It is recommended to adjust the subcarrier phase after approximately 30 minutes warm-up.

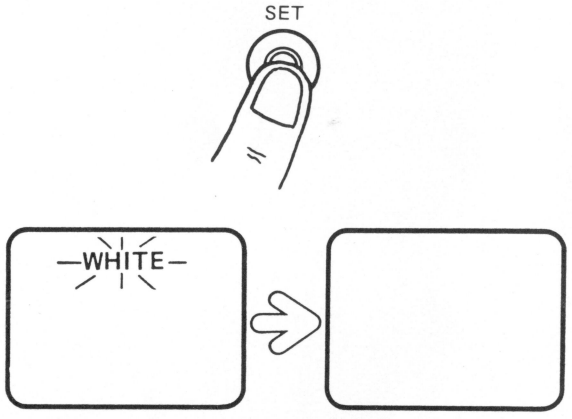
8) Set the Color Bar/Camera/Standby Selection Switch 11 to the CAMERA position.
9) Select the proper color temperature filter in the Filter Wheel 15 according to the table on page 45.
10) Set the AGC ON/OFF Switch 19 to the ON position.
11) Set the Iris Ring 67 on the auto iris power servo control zoom lens to the A (auto) position while pressing the Pin Button 68 on the lens.
12) Set the White Balance Selection Switch 21 to the AWC1 (or AWC2) position.



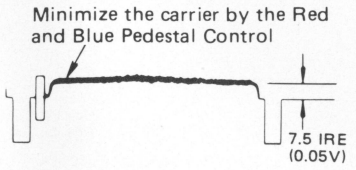
13) Aim the camera at the white balance set chart or a white object such as white paper or wall.
Note : 1. If the white object can not be found, aim the camera at the whitish object and cap the lens with the attached white lens cap.

2. When the lens iris must be set to the manual iris control mode, set the Level Indicator ON/OFF Switch 10 to the ON position and turn the lens iris so that it positions at a point where the white object is just before turning to the zebra pattern on the viewfinder.

14) Press the White Set Button 20 momentarily to automatically activate the white balance setting. The white balance is automatically set within approximately 2 seconds. The WHITE graphics is blinking to indicate the white balance setting and it disappears when the white balance setting is completed.
If the blinking WHITE graphics remains, reset the white balance after confirming the object and the position of Filter Wheel 15 referring to the Table on page 45.



Note : (1) The white balance setting should be done at the center (detent) position of the Red and Blue Gain Control Knob on the camera.
(2) The white balance may not be properly balanced under low illuminations when the EVF of the camera displays the blinking LIGHT graphics.
(3) It is recommended that the white balance should be set after a few minutes warm-up period.
(4) The white balance is held for a long period of time by the internal backup battery even after the power switch is turned OFF. Therefore, if the color temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance.
However, when the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.
(5) The black balance can be manually adjusted by the Red and Blue Pedestal Control 45 & 46. Use the waveform monitor or oscilloscope for precise adjustment.
(6) The total pedestal level can be adjusted by turning the Total Pedestal Control 44. The pedestal level should be set to 7.5IRE unit (0.05V).



15) The white balance for different light condition/color temperature can be set in advance by setting the White Balance Selection Switch 21 to the AWC2 (or AWC1) position and pressing the White Set Button 20 as in the case of previous setting.
16) Adjust the zoom lens with the Power Servo Zoom Control 62 or manual Zoom Ring/Lever 65 to have the desired picture composition.
17) Turn the Focus Ring 63 to get the best focus by watching the picture in the viewfinder.
For macro function : Set the Zoom Ring/Lever to macro range by turning while depressing the Macro Knob 66 after pulling the Servo/Manual Zoom Select Knob 59 to the MANUAL position for close up picture at distance as short as 5cm (2").

3. Gen-Lock EFP with RCU Application (Studio Application)

1) Make all the required connections and make sure that the Gen-lock Input Termination Switch 90 and the Auxiliary Input Termination Switch 92 are properly set.
2) Set the VTR/RCU Selection Switch 37 to the RCU position.
Note : The Color Bar/Camera/Standby Selection Switch 11, the High Gain Selection Switch 18, the AGC ON/OFF Switch 19, the White Set Button 20 and the White Balance Selection Switch 21 on the camera are not functional when the RCU is used except the STANDBY position of the Color Bar/Camera/Standby Selection Switch.
3) Set the Power Switch 35 to the VTR/RCU position.

4) Set the Cable Length Compensation Switch 77 according to the length of studio cable used.

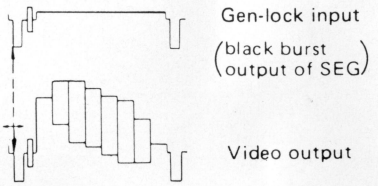
Note : 1. Standard cable length is 30 ft.

2. If the RCU is operated in the external DC mode, the DC voltage should be selected according to the studio cable length as shown below. Maximum voltage can be supplied is 22V.

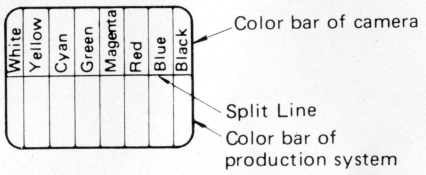
Studio Cable Length	DC Power
10m (30ft)	More than 12V, 2A
40m (120ft)	More than 15V, 1.8A
70m (210ft)	More than 18V, 1.6A
100m (300ft)	22V, 1.4A

5) Set the Color Bar/Camera Selection Switch 80 to the BAR position.

6) Observe the gen-lock input and video output signals of RCU using a dual-trace oscilloscope and adjust the Horizontal Phase Control 85 to match the phase of these signals.



7) Observe the program color monitor output displaying the split picture of color bar of the camera and color bar of production system, and adjust the Subcarrier Phase Coarse Switch 83 and Fine Control 84 to match the hues.



Note : 1. Precise adjustment should be done using a vectorscope. Refer to the details to the operating instructions for the special effects generator.

2. It is recommended to adjust the subcarrier phase after approximately 30 minutes warm-up.

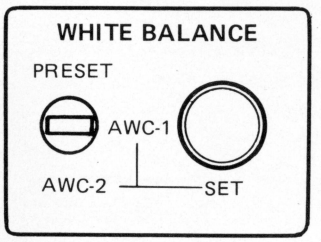
8) Set the Color Bar/Camera Selection Switch 80 to the CAMERA position.

9) Select the proper color temperature filter in the Filter Wheel 15 on the camera according to the table on page 45.

10) Set the AGC ON/OFF Switch 78 to the ON position.

11) Set the Iris Ring 67 on the auto iris power servo control zoom lens to the A(auto) position while pressing the Pin Button 68 on the lens.

12) Set the White Balance Selection Switch 81 to the AWC1 (or AWC2) position.



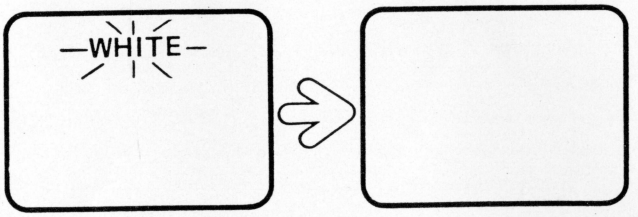
13) Aim the camera at the white balance set chart or a white object such as white paper or wall.

Note : 1. If the white object can not be found, aim the camera at the whitish object and cap the lens with the attached white lens cap.

2. When the lens iris must be set to the manual iris control mode, set the Level Indicator ON/OFF Switch 10 on the camera to the ON position and turn the Lens Iris Control 87 so that it positions at a point where the white object is just before turning to the zebra pattern on the viewfinder.

14) Press the White Set Button 82 momentarily to automatically activate the white balance setting. The white balance is automatically set within approximately 2 seconds. The WHITE graphics is blinking to indicate the white balance setting and it disappears when the white balance setting is completed.

If the blinking WHITE graphics remains, reset the white balance after confirming the object and the position of Filter Wheel 15 referring to the Table on page 45.



Note : (1) The white balance setting should be done at the center (detent) position of the Red and Blue Gain Control Knob on the camera.

(2) The white balance may not be properly balanced under low illuminations when the EVF of the camera displays the blinking LIGHT graphics.

(3) It is recommended that the white balance should be set after a few minutes warm-up period.

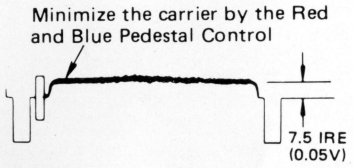
(4) The white balance is held for a long period of time by the internal backup battery even after the power switch is turned OFF. Therefore, if the color temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance.

However, when the color temperature is changed from indoor to outdoor, for example, the white balance should be reset.

(5) The black balance can be manually adjusted by the Red and Blue Pedestal Control 45 & 46. Use the waveform monitor or oscilloscope for precise adjustment.

(6) The total pedestal level can be adjusted by turning the Total Pedestal Control 86.

The pedestal level should be set to 7.5IRE unit (0.05V).



15) The white balance for different light condition/ color temperature can be set in advance by setting the White Balance Selection Switch 81 to the AWC2 (or AWC1) position and pressing the White Set Button 82 as in the case of previous setting.

16) Adjust the zoom lens with the Power Servo Zoom Control 62, manual Zoom Ring/Lever 65 or the studio conversion kit to have the desired picture composition.

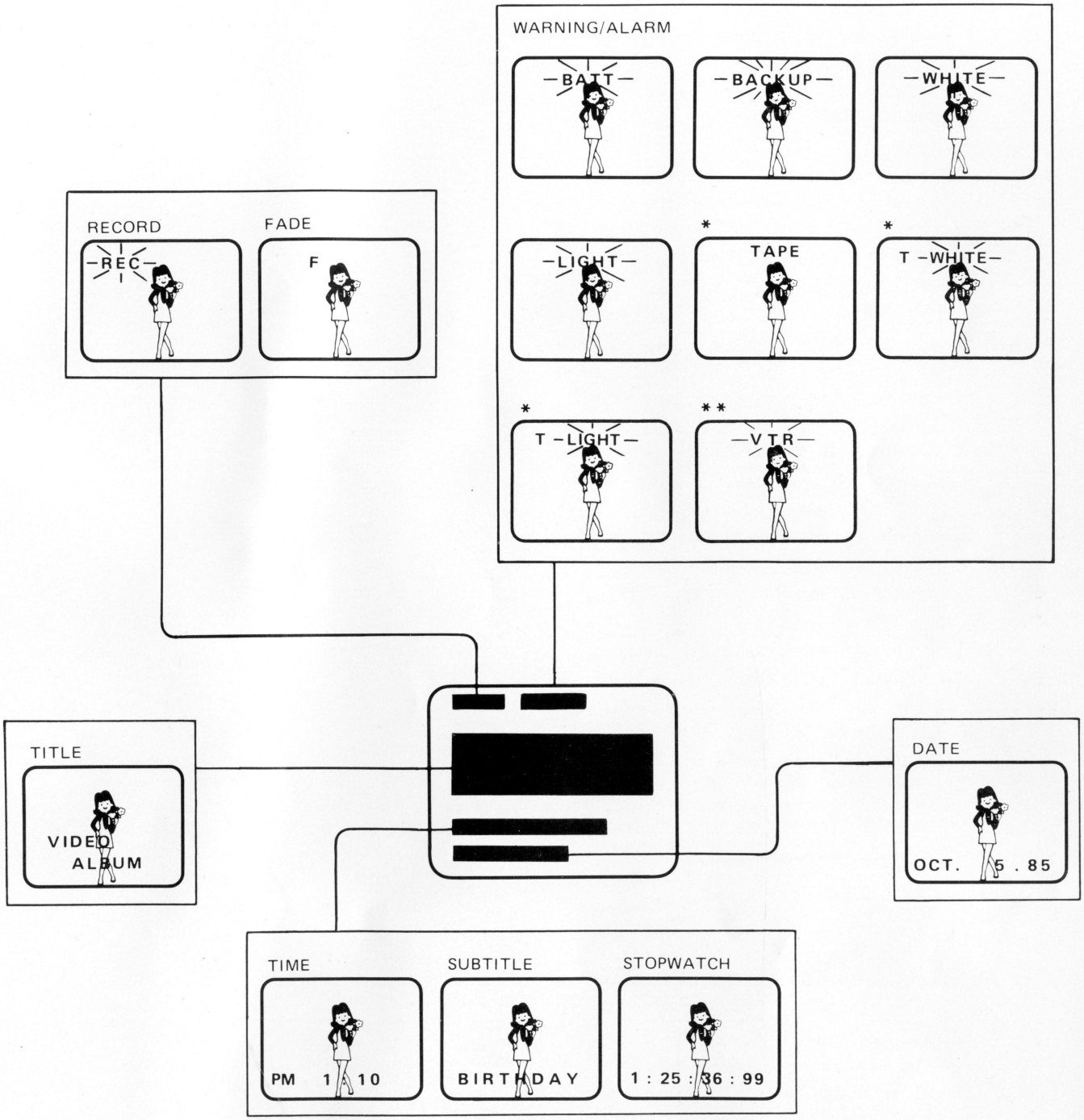
17) Turn the focus ring 63 or studio conversion kit to get the best focus by watching the picture in the viewfinder.

For macro function : Set the Zoom Ring/Lever to macro range by turning while depressing the Macro Knob 66 after pulling the Servo/Manual Zoom Select Knob 59 to the MANUAL position for close-up picture at distance as short as 5cm (2").

Note : The lineview output of special effects generator through the RCU can be observed on the viewfinder when the return video button 61 on the lens is pressed.

EVF DISPLAY

The following functional graphics of the camera are displayed in the EVF to show the operator the camera's conditions as follows;



Note : 1. Warning/alarm graphics indicated by * mark are displayed only when the camera is used with the Panasonic portable VTR (such as AG-2400).

2. Warning/alarm graphics indicated by ** mark is displayed only when the camera is used with the panasonic portable VTR (such as NV-9450).

EVF DISPLAY OPERATION

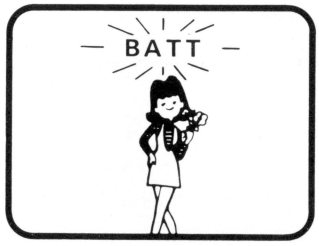
1. WARNING/ALARM GRAPHICS (These graphics can not be recorded.)

Proceed the next operation after resolving the warning/alarm.

Note : The warning/alarm graphics are displayed only in the recording mode.

(1) BATTERY :

When the battery pack on the camera or DC voltage supplied to the camera becomes low level, the blinking "BATT" graphics is displayed in the EVF.

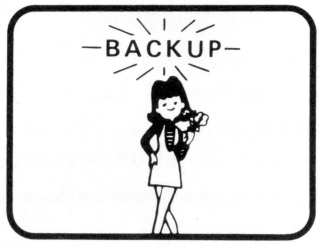


Replace or recharge the battery pack, or increase the DC voltage.

(2) BACKUP BATTERY :

When the backup battery in the backup battery compartment of the camera becomes low level, the blinking "BACKUP" graphics is displayed in the EVF.

Replace the backup battery.



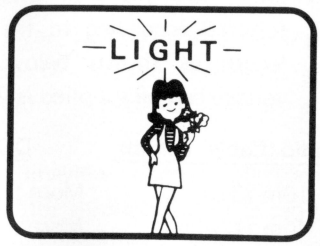
(3) WHITE :

When the white balance is unbalanced, the blinking "WHITE" graphics is displayed in the EVF.

Press the White Set Button 20 or 82 on the camera or the RCU while aiming the camera at the white object such as white wall or white paper after setting the White Balance Selection Switch 21 or 81 on the camera or the RCU to the AWC1 or AWC2 position and confirm that the blinking "WHITE" graphics disappears.

(4) LIGHT :

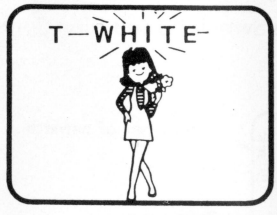
When the light level becomes insufficient, the blinking "LIGHT" graphics is displayed in the EVF. Additional lighting is required.

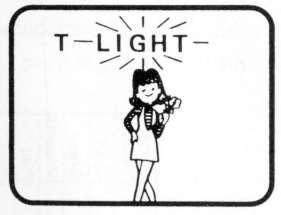


(5) TAPE :

When the amount of video tape to be recorded becomes less than 10 minutes, the "TAPE" graphics is displayed in the EVF.

If the amount of video tape becomes less than 10 minutes while the blinking "WHITE" or "LIGHT" graphics are being displayed, the "T" graphics is displayed in addition to the blinking graphics.



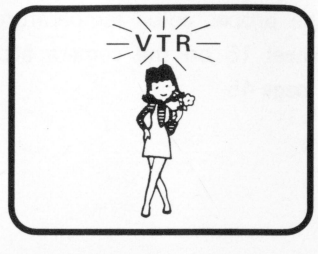


Note : The "TAPE" or "T" graphics is displayed only when the camera is used with the Panasonic portable VTR (such as AG-2400).

(6) VTR :

When the video tape is not loaded or ended or the servo mechanism works improperly, the blinking "VTR" graphics is displayed in the EVF.

Check the VTR.



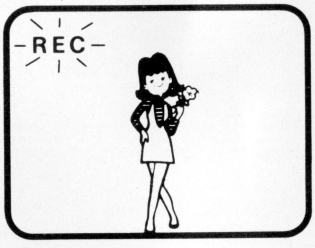
Note : The "VTR" graphics is displayed when the camera is used with the Panasonic portable VTR NV-9450.

Note : The priority order for the warning/alarm graphics is BATT ⟶ VTR ⟶ BACK-UP ⟶ WHITE ⟶ LIGHT ⟶ TAPE. The lower priority warning/alarm will function after resolving the higher priority warning/alarm.

2. FUNCTIONAL DISPLAY (These graphics can not be recorded.)

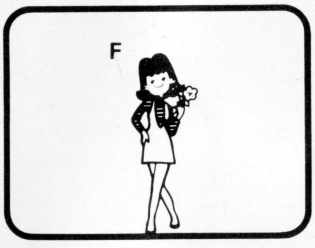
(1) Recording Display

When the VTR Start/Stop Switch 17 or 60 on the camera or the lens is pressed, the blinking "REC" graphics is displayed for indicating recording mode.



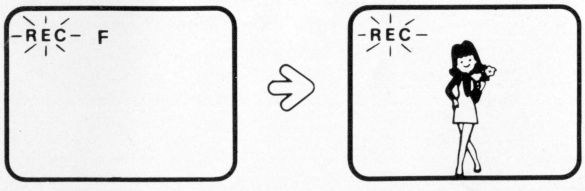
(2) Fade-in/out Operation Display

When the Fade Button 16 is pressed for the fade-in/out operation, the "F" graphics is displayed.



(a) Fade-in Operation

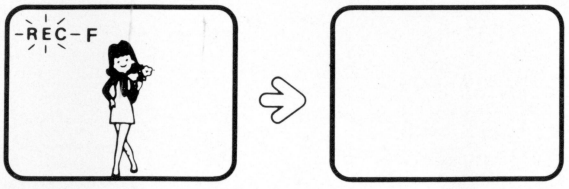
When the VTR Start/Stop Switch 17 or 60 on the camera or the lens is pressed after the Fade Button 16 is pressed, the blinking "REC" and "F" graphics are displayed for fade-in operation. When the fade-in operation is completed, the "F" graphic disappears.



(b) Fade-out Operation

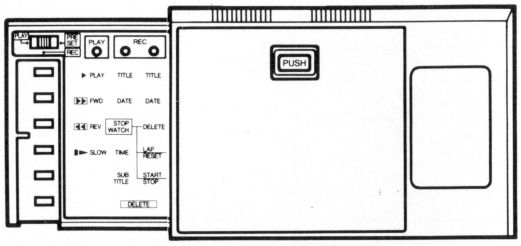
When the Fade Button 16 is pressed during recording, the blinking "REC" and "F" graphics are displayed for ready of fade-out operation.

Then, press the VTR Start/Stop Switch 17 or 60 for fade-out operation and the blinking "REC" and "F" graphics disappear when the fade-out operation is completed.



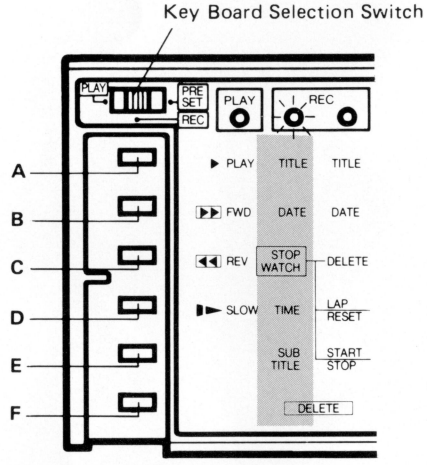
3. TIME and DATE GRAPHICS (These can be recorded.)

Preset the time and date previously according to TIME and DATE Setting mentioned in the next.
The preset time and date are functioned by backup battery even when the camera is OFF.
Open the Cover 22 for Key Board by sliding it to the right side as shown below.

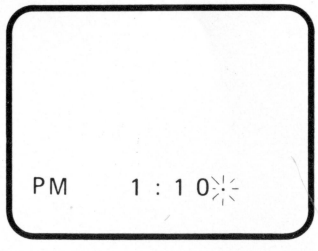


➡ Slide to the right side

Set the Key Board Selection Switch 41 to the REC position. The left side of REC indicator lights.



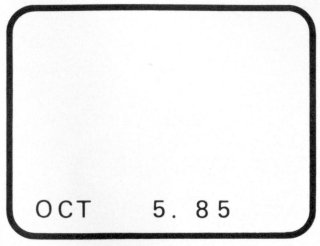
(1) Time Display
Press the TIME button (D) to display the time.



The blinking point shows the second.
By pressing this button again, the time graphics disappears form the screen.

Note : When the TIME is displayed, the STOPWATCH and SUBTITLE can not be displayed. If the STOPWATCH or SUBTITLE button ((C) or (E)) is pressed while the TIME is displayed, the TIME graphics is deleted.

(2) Date Display
Press the DATE button (B) to display the date.



Press the DATE button (B) again to delete the date graphics.

Note : By pressing the DELETE button (F), the all graphics except the functional/warning graphics disappear form the screen.

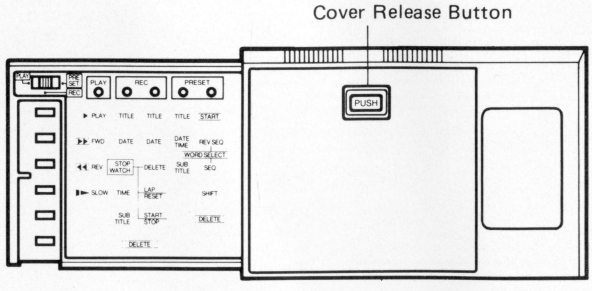
4. TIME and DATE Setting

The time and date are preset by the Key board buttons during Stop or Record/Pause mode of VTR. To set the time and date is as;

TIME : 1:10 P.M.
DATE : October 5, 1985

The following are setting procedure.

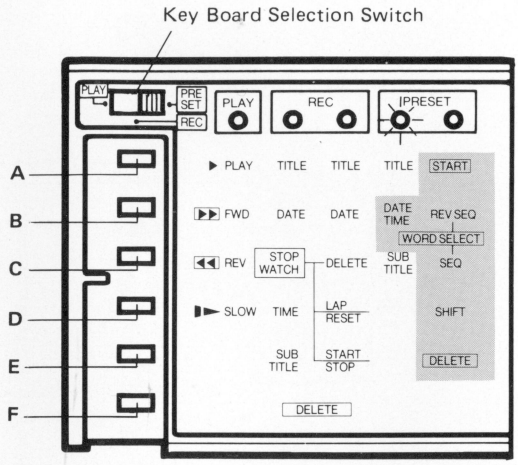
1. Open the Cover 22 for Key Board by sliding it to the right side while pressing the cover release button.



➡ Slide to the right side

2. Set the Key Board Selection Switch 41 to the PRESET position. The left side of PRESET indicator lights.

Note : 1. When presetting the time and date, the WORD SELECT/REV SEQ Button (B) is not functional.
2. After presetting the time and date, the Key Board Selection Switch 41 should be set to the REC position.



Procedure	EVF Screen	Procedure	EVF Screen
❶ Press the DATE/TIME button (B) and the hour portion is blinking. The right side of PRESET indicator lights.	–AM 12:00 JAN 1.84	❼ Press the SHIFT button (D) and the date portion is blinking.	PM 1:10 OCT 1 84
❷ Press the WORD SELECT/SEQ button (C) to change the hour in sequence until the desired hour "PM1" appears.	–PM 1:00 JAN 1.84	❽ Press the WORD SELECT/SEQ button (C) to change the date in sequence until the desired date "5" appears.	PM 1:10 OCT 5 84
❸ Press the SHIFT button (D) and the minute portion is blinking.	PM 1:00 JAN 1.84	❾ Press the SHIFT button (D) and the year portion is blinking.	PM 1:10 OCT 5 84
❹ Press the WORD SELECT/SEQ button (C) to change the minute in sequence until the desired minute "10" appears.	PM 1:10 JAN 1.84	❿ Press the WORD SELECT/SEQ button (C) to change the year in sequence until the desired year "85" appears.	PM 1:10 OCT 5 85
❺ Press the SHIFT button (D) and the month portion is blinking.	PM 1:10 –JAN–1.84	⓫ Press the START button (A) to activate/start the time and date. The blinking point counts second.	PM 1:10 OCT 5.85
❻ Press the WORD SELECT/SEQ button (C) to change the month in sequence until the desired month "OCT" appears.	PM 1:10 –OCT–1.84		

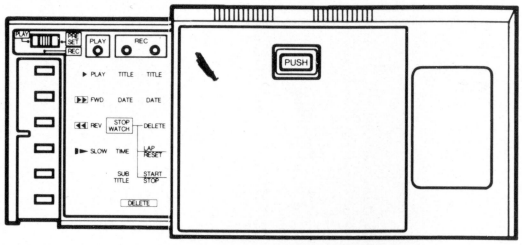
To set the year, the year number is shifted in sequence by pressing the WORD SELECT/SEQ button (C) as follows.

84 ➡ 85 ····· 99 ➡ 00 ➡ 01 ····· 83

STOPWATCH/LAP TIME

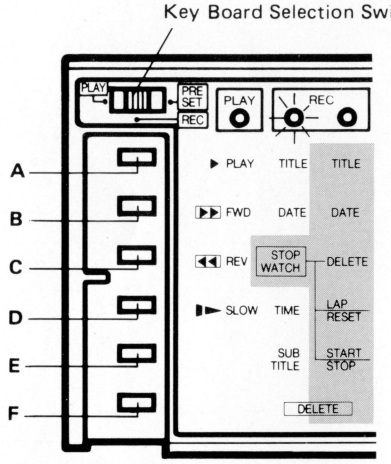
The stopwatch can be recorded with camera picture.

1. Open the Cover 22 for Key Board by sliding it to the right side as shown below.

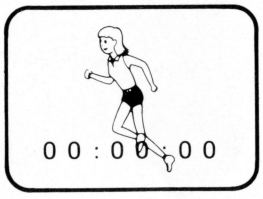


➡ Slide to the right side

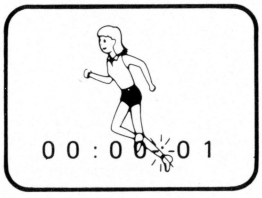
2. Set the Key Board Selection Switch 41 to the REC position. The left side of REC indicator lights.

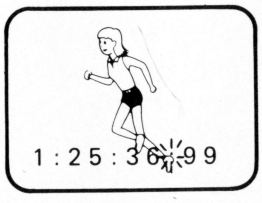


3. Press the STOPWATCH button (C) to select the stopwatch display. The right side of REC indicator lights. If the button (C) is pressed again, the stopwatch display disappears.



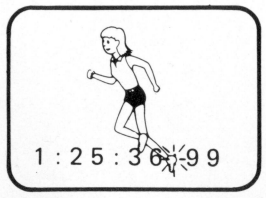
4. Press the START/STOP button (E) to start the stopwatch function.





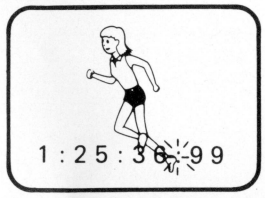
The "1:25:36:99" of the stopwatch indicates 1 hour 25 minutes 36 seconds and 99.
The minimum time unit is a hundredths ($\frac{1}{100}$) seconds.
The maximum stopwatch time is 9 hours 59 minutes 59 seconds and 99.

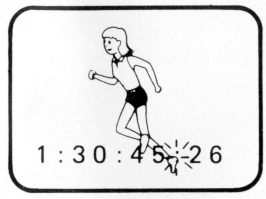
5. Press the LAP/RESET button (D) to show the lap time.



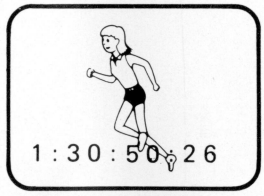
The colon for second blinks per second.
The blinking colon indicates that the time is being counted.

6. Again press the LAP/RESET button (D) to back for normal stopwatch function.

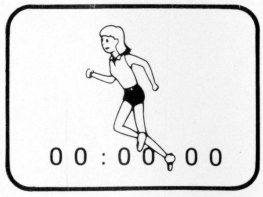




7. Press the START/STOP button (E) to stop the stopwatch function.



8. Press the LAMP/RESET button (D) to reset the stopwatch time.



9. Press the DELETE button (C) to delete the stopwatch display.

Note : The stopwatch function can not be linked with the VTR start/stop button.

TITLE

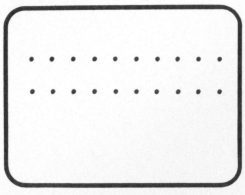
The title and subtitle for recording can be generated and can be prepared previously. The preset titles are memorized by the backup battery even when the power source is OFF.

1. CHARACTER/WORD

The following characters are used for making the title as;

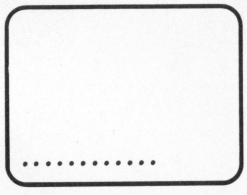
A B C D E ------ X Y Z 0 1 2 3 ---- 8 9 : . - /

The large size of the character is available for title.



Large Size : 20 characters
2 rows : 10 characters/row
10 columns

The small size of the character is available for subtitle.



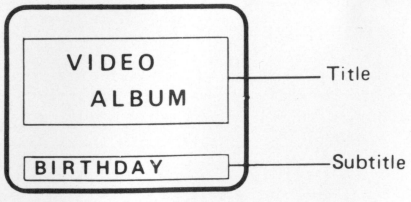
1 row : 12 characters

2. CHARACTER/WORD SELECTION

The character can be selected by pressing the WORD SELECT SEQ (sequence) button (C) to change forward or by pressing the REV SEQ (reverse sequence) button (B) to change backward as;

A B C D E ------ X Y Z 0 1 2 3 ---- 8 9 : . - /·

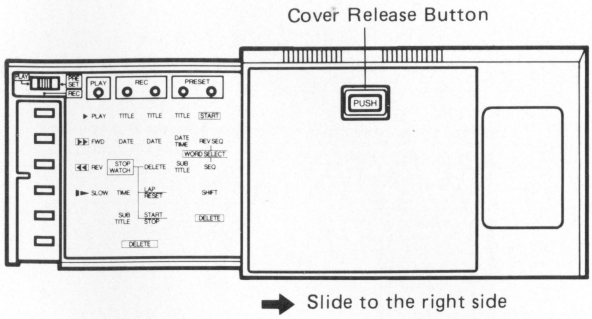
3. TITLE LAYOUT



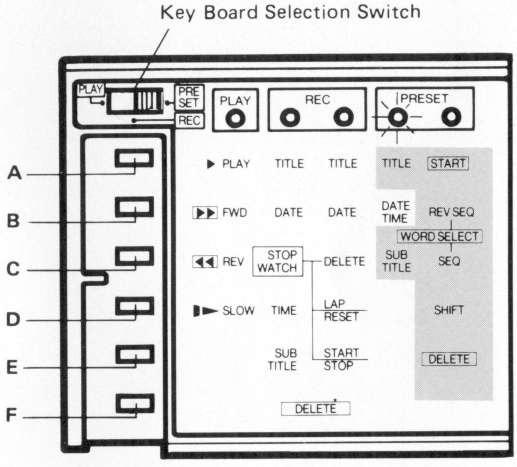
4. HOW TO MAKE TITLE AND SUBTITLE

(1) Confirm that the portable VTR is in the Stop or Record/Pause mode.

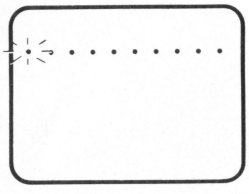
(2) Open the Cover 22 for Key Board by sliding it to the right side while pressing the cover release button.



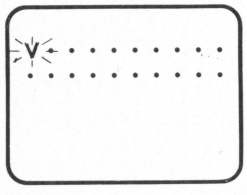
(3) Set the Key Board Selection Switch 41 to the PRESET position. The left side of PRESET indicator lights.



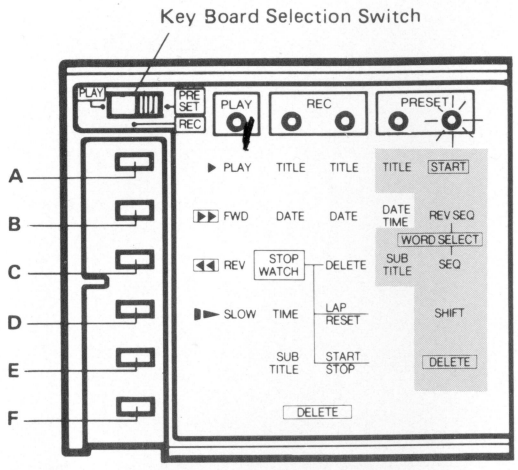
(4) Press the TITLE BUTTON (A) to preset the title. The right side of PRESET indicator light and the first position for character selection is blinking. If/when the title characters for the title is already set and is desired to set new title press the DELETE button (E).

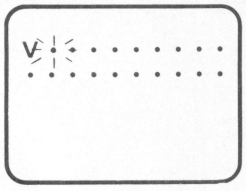


(5) Press the SEQ button (C) of the WORD SELECT to change the character forward unit the desired word "V" appears, or press the REV SEQ button (B) of the WORD SELECT to change the character backward until the desired word "V" appears.

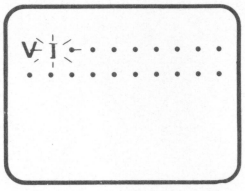


(6) Press the SHIFT button (D) to shift the blinking point to right for selecting next word.

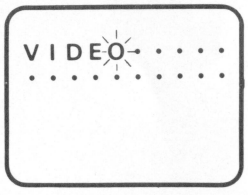




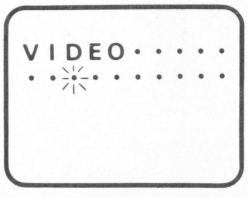
(7) Press the SEQ button (C) of the WORD SELECT to change the character forward until the desired word "I" appears, or press the REV SEQ button (B) of the WORD SELECT to change the character backward until the desired word "I" appears.



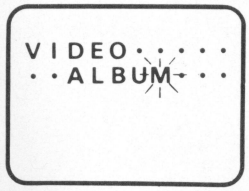
Same procedure can be carried until last word "O" of the "VIDEO" is selected.



(8) Keep pressing the SHIFT button (D) to shift the blinking point to right and shift down to 2nd row and continue pressing the SHIFT button (D) for shifting the blinking point to the desired position where the character is selected.

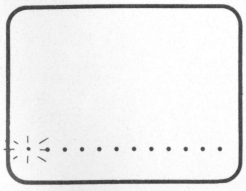


(9) Set the "ALBUM" with the same procedure.

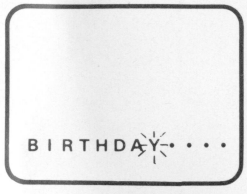


(10) Press the START button (A) for the completion of the title setting and the title is memorized.

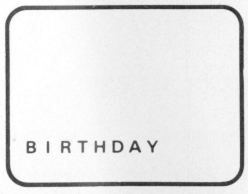
(11) Press the SUBTITLE button (C) to set the subtitle.



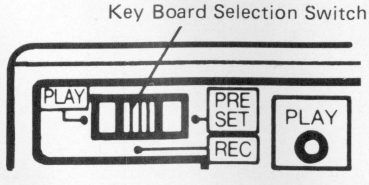
(12) Set the subtitle as BIRTHDAY with same procedure as the title setting.



(13) Press the START button (A) for the completion of the subtitle setting and the subtitle is memorized.



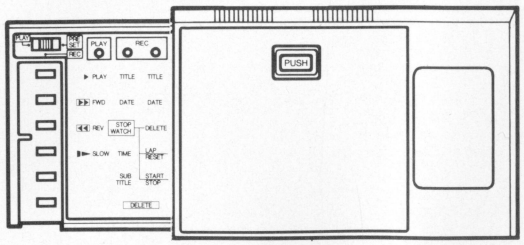
(14) Set the Key Board Selection Switch 41 to the REC position for title recording.



(15) Press the DELETE button (F) to delete the title and subtitle from the screen.

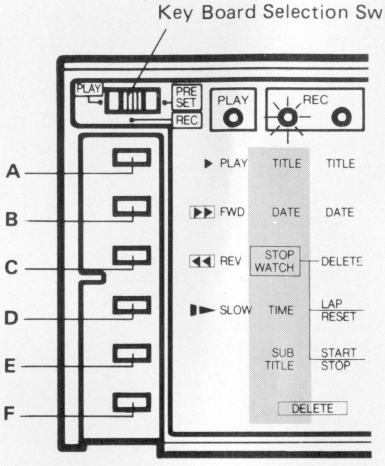
5. HOW TO RECORD TITLES

(1) Slide the cover to the right side as shown below.



➡ Slide to the right side

(2) Make sure that the Key Board Selection Switch 41 is set to the REC position.
The left side of REC indicator lights.



(3) Press the TITLE button (A) to display the title.

Note : When the title is not set, nothing is displayed.

The title disappears from the screen by pressing the TITLE button (A) again.

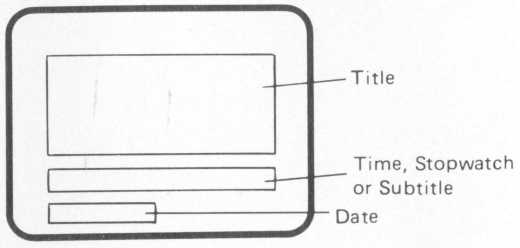
(4) Press the SUBTITLE button (E) to display the subtitle.

Note : When the subtitle is not set, nothing is displayed.

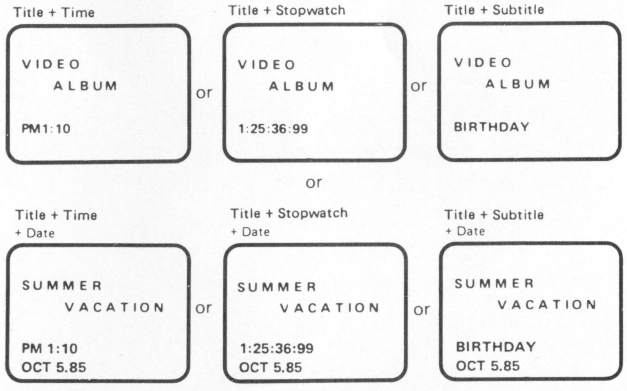
The subtitle disappears from the screen by pressing the SUBTITLE button (E) again.

Note : The title, subtitle, time date and stopwatch graphics disappear from the screen by pressing the DELETE button (F).

(5) The title and date and time or stopwatch or subtitle can be recorded together as;

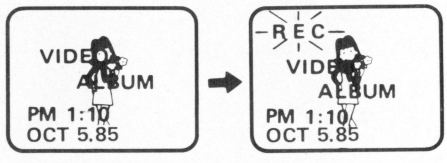


By pressing the TITLE(A), DATE(B), STOP-WATCH(C), TIME(D) and SUBTITLE(E) buttons, the following combination of graphics display can be made.



Note : The internal titles (title and subtitle), time and date are continually functioned by backup battery even when the power source is OFF.
When the backup battery becomes low level, the blinking "BACKUP" graphics is displayed in the EVF. Replace the backup battery.

(6) Press the VTR START/STOP button on the lens or the camera for recording.



Note : The title, time, date, stopwatch and subtitle can also be selected and displayed during recording.

FADE IN/OUT OPERATION

When the movie or TV program is seen, the picture gradually appears from the dark at the beginning of the scene (FADE IN effect) and gradually disappears to the dark scene at the end of the scene (FADE OUT effect). When the FADE IN/OUT effect is desired, press the VTR Start/Stop Button 17 or 60 on the camera or the lens after depressing the Fade Button 16.

The FADE IN/OUT effect will be accomplish once. If another FADE IN/OUT effect is desired, the Fade Button should be pressed again.

This prevents the FADE IN/OUT performance at undesired portion by misoperation.

The audio sound FADE IN/OUT effect is simultaneously performed with the picture fade in/out.

FADE IN Effect

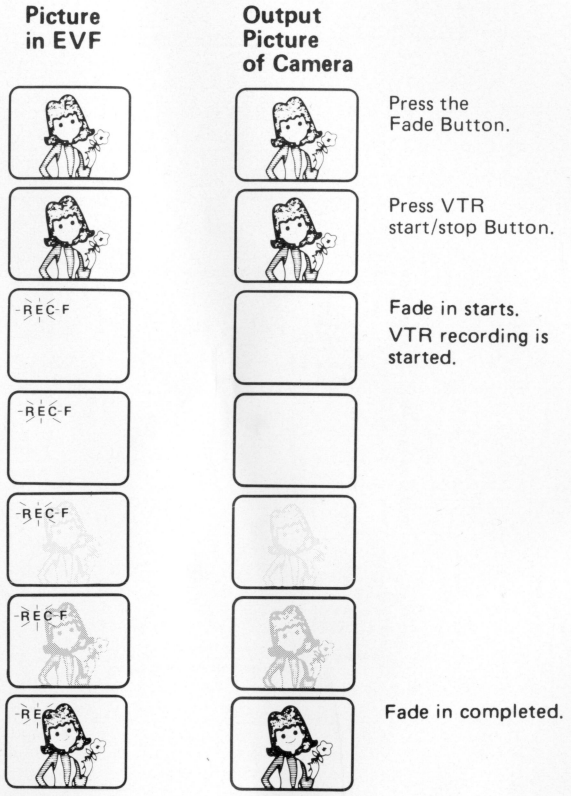
1. Press the Fade Button 16 while VTR is in Record/Pause mode.
   The "F" graphics is displayed in the EVF.
2. Press the VTR Start/Stop Button 17 or 60 for VTR recording.
3. The picture in the viewfinder gradually disappears once, then the picture gradually appears again (fade in).
   The audio sound is also simultaneously performed with the picture fade in.
   When the picture in the EVF disappears, the blinking "REC" graphics is displayed and the VTR starts to record.
   The "F" graphics disappears when the fade in effect is completed.

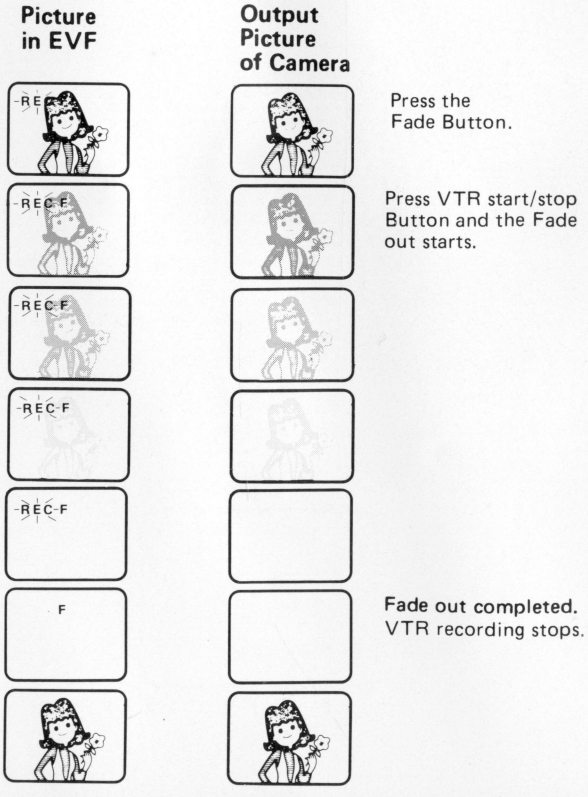
FADE OUT Effect

1. Press the Fade Button 16 while VTR is recording.
   The "F" graphics is displayed in the EVF.
2. Press the VTR Start/Stop Button 17 or 60 for ending VTR record.
3. The picture in the recording gradually disappears (fade out) as the picture in the EVF also gradually disappears. When the picture in the EVF disappears, VTR ends the recording and stops, and the picture again appears automatically for the next fade in effect.
   The audio sound is also simultaneously performed with the picture fade out. When the fade out effect is completed, the blinking "REC" and "F" graphics disappear.

Note : (1) VTR Start/Stop Button is disabled during the fade in/out effect.
This prevents abrupt picture change during the fade in/out effect by misoperation of the VTR Start/Stop Button.

(2) If the Fade Button is pressed again before pressing the VTR Start/Stop Button, the fade condition is defeated.

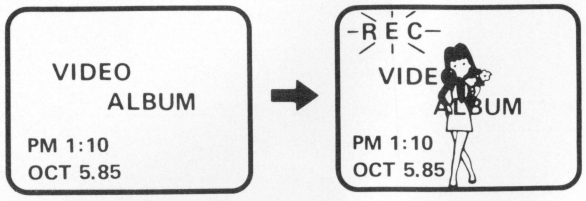




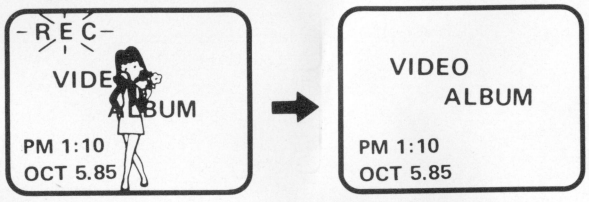
CAUTION FOR FADE OPERATION

When the title/time/date are displayed on the picture while the camera is shooting and the fade operation is desired, press the Fade Button 16 on the side of the camera at first and press the VTR Start/Stop Button 17 or 60 on the camera or the lens. The camera picture is only functioned for fading and the titles, time and date do not fade.

- Fade in :



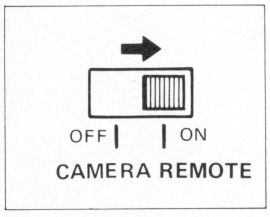
- Fade out :



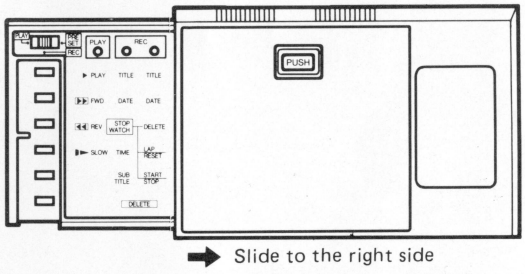
VTR REMOTE CONTROL PLAYBACK OPERATION

The portable VTR playback can be remotely controlled from the camera only when the camera is connected with portable VTR such as Panasonic AG-2400 which has the Camera Remote Switch. Even when the playback picture is shown in the EVF of the camera, the playback audio can not be monitored through the earphone of the camera.
The following are the operating procedure for the playback operation as;

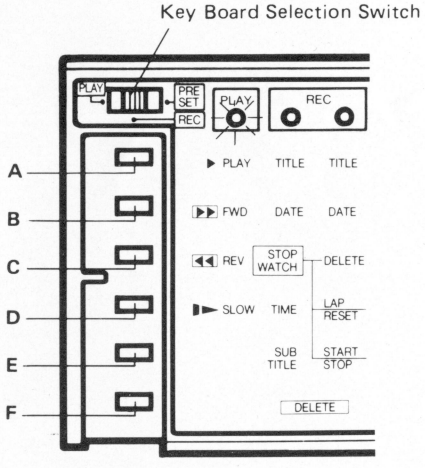
1. Set the Camera Remote Switch on the portable VTR to the ON position.



2. Open the Cover 22 for Key Board by sliding it to the right side as shown below.



3. Set the Key Board Selection Switch 41 to the PLAY position. The PLAY indicator lights.



4. Press the PLAY BUTTON (A) on the key board for playback picture.

5. press again the PLAY button (A) for still picture.
6. Keep pressing the FWD button (B) for the fast forward playback picture during playback.
   When the FWD button (B) is released, the picture becomes the still picture.
7. Keep pressing the REV button (C) for the fast backward playback picture during playback.
   When the REV button (C) is released, the picture becomes the still picture.
8. Keep pressing the SLOW button (D) for the slow playback picture during playback.
   When the SLOW button (D) is released, the picture becomes the still picture.
9. While the slow picture is played back, the each frame still picture is advanced whenever the SLOW button (D) is repeatedly pressed.
   When the SLOW button (D) is released, the picture becomes the still picture.

Notes : (1) The playback audio can be monitored by using earphone jack on the portable VTR.
The playback audio cannot be monitored from the camera.

(2) The camera should be used with the portable VTR with the Camera Remote Switch such as Panasonic portable VTR AG-2400.

(3) When the camera is used with Panasonic portable VTR AG-2400 and the playback picture is shown, the portable VTR becomes the Play/Pause mode at the end of the tape.
When the portable VTR is recording, the portable VTR is automatically stopped at the end of the tape and the power is off.

FILTER WHEEL SETTING

Select the color temperature conversion filter according to the light source used.

	Object/Scene & Light Source Condition	Color Temperature	Wheel No.
INDOOR	Halogen Lamp or Tungsten Lamp (Studio)	3200°K	1
INDOOR	Fluorescent Lamp (White)	4500°K	3
INDOOR	Fluorescent Lamp (Daylight)	6500°K	3
OUTDOOR	Daylight (Very Fine)	4500°K	2
OUTDOOR	Daylight (Fine-Partly Cloudy)	5000° – 6000°K	2
OUTDOOR	Cloudy	7000° – 7500°K	3

Note : The outdoors color temperature changes according to the weather conditions.

SPECIFICATIONS

ENG Color Camera WV-6000

Pick-up System :	Frequency separation system using a single SATICON™ tube
Pick-up Tube :	One high-band (6MHz) 2/3" integral stripe filter electrostatic focusing, magnetic deflection SATICON™ tube, type H4190
Scanning Standard :	525 lines, 60 fields, 30 frames
Synchronizing System :	Internal or external (gen-lock) switchable automatically, H and V. blanking width switchable internally
External (gen-lock) Input :	NTSC composite (VBS) signal or black burst signal
Subcarrier Phase for Gen-Lock :	Adjustable more than 360°
Horizontal Phase for Gen-Lock :	Adjustable from −0.1 μsec to +1.5 μsec
Video Output :	Two outputs 1.0Vp-p NTSC composite/75 ohms x 1 (BNC connector) 1.0Vp-p NTSC composite/75 ohms x 1 (14-pin VTR/RCU connector)
Auxiliary Input :	1.0Vp-p composite/75 ohms through 14-pin VTR/RCU connector
Microphone :	Stereo microphone
Mic Input :	
Internal (Detachable) :	−70 dBm x 1 (M3 stereo jack)
External :	−70 dBm/600 ohms unbalanced x 2 (stereo) (M3 jack)
Audio Output :	−20 dBm or −60 dBm/high impedance, switchable (14-pin VTR/RCU connector)
Illumination Required :	140 footcandles (1400 lux) at F4
Required Minimum Illumination :	2 footcandles (20 lux) at AGC ON
Signal-to-Noise Ratio :	50 dB (luminance) at 140 footcandles (1400 lux), F4 without gamma and aperture correction
Horizontal Resolution at center : (luminance)	420 lines
Geometric Distortion :	2%
Sweep Linearity :	2%
Vertical Enhancer :	2-line type
White Balance :	Automatic, two-position
Level Indicator :	Zebra pattern
Feedback (Automatic) Beam Control :	Built-in
Color Bar :	Built-in full field color bar generator
Color Conversion Filters :	3200°K, 5600°K, 5600°K with 12.5% ND, close
Maximum Cable Length :	
VTR Cable :	23m (70ft)
14-pin Studio Cable :	100m (300ft) with cable compensator
Graphics Display :	Title, Subtitle, Time, Date, Stopwatch
EVF Display/Alarm :	REC (recording), F (fade), BACKUP (backup battery), BATT (battery), WHITE (white balance), LIGHT (low light), TAPE or T (tape end), VTR (VTR alarm)
Switches/Buttons :	Power, VTR/RCU Selection, Color Bar/Camera/Standby Selection, High Gain Selection, AGC ON/OFF, White Balance Selection, White Set, Level Indicator ON/OFF, Fade, Rec Review, VTR Start/Stop, VTR Compatibility. Audio Level Selection, Subcarrier Phase Coarse, Key Board Selection, Key Board
Controls :	R Gain, B Gain, Intercom Level, R Pedestal, B Pedestal, Total Pedestal, Subcarrier Phase Fine, Horizontal Phase
Lens Attached :	12:1 auto iris power servo control zoom lens 10.5mm - 126mm, F1.6, macro function
Lens Mount :	Special Mount
Lens Filter Size :	φ 72mm P = 0.75

TM : Trademark

Power Source :	12V DC five (4) ways such as; (1) Battery pack (2) External DC through 4-pin external DC connector (3) VTR (operated with external AC adaptor) (4) Remote control unit through 14-pin camera cable
Battery Pack Operating Time :	Approx. 2 hours with optional WV-PS60
Power Consumption :	
Camera Head :	9.5 watts (12V DC, 0.8A)
ENG Configuration : (with WV-VF60)	10.5 watts (12V DC, 0.875A)
ENG Configuration : (with WV-VF61)	12.0 watts (12V DC, 1A)
Studio Configuration :	19 watts (12V DC, 1.6A)
Ambient Operating Temperature :	32°F – 104°F (0°C – +40°C)
Ambient Operating Humidity :	30% – 90%
Dimensions :	
Camera Head Only :	5-1/16" (W) x 6-1/4" (H) x 10-13/16" (D) 128 (W) x 159 (H) x 275 (D) mm
ENG Configuration :	9-5/8" (W) x 9" (H) x 21" (D) 244 (W) x 229 (H) x 534 (D) mm
Studio Configuration :	6-7/16" (W) x 14-3/16" (H) x 22-1/16" (D) 164 (W) x 360 (H) x 560 (D) mm
Weight :	
Camera Head Only :	5.1 lbs (2.32kg)
ENG Configuration :	11.8 lbs (5.38kg)
Studio Configuration :	16.6 lbs (7.5kg)

Weights and dimensions shown are approximate.
Specifications are subject to change without notice.

COMPOSITION

■ **ENG Color Camera WV-6000**

* Camera Head (WV-6000H) ..... 1 set
* 1.5 " Monochrome Electronic Viewfinder .. 1 set
* 12:1 Servo Control Zoom Lens ..... 1 pc
* Stereo Microphone ..... 1 pc
* Carrying Case ..... 1 pc
* Shoulder Pad and Tripod Mounting Block... 1 set
* White Balance Set Chart ..... 1 pc
* Color Sheet ..... 1 pc
* PCB Extender Board ..... 1 pc

■ **ENG Color Camera Head WV-6000H**

* Camera Head (WV-6000H) ..... 1 set
* White Balance Set Chart ..... 1 pc
* Color Sheet ..... 1 pc
* PCB Extender Board ..... 1 pc

■ **Studio Configuration WV-6000ST**

* Camera Head (WV-6000H) ..... 1 set
* 5" Monochrome Electronic Viewfinder WV-VF65 ..... 1 set
* Remote Control Unit WV-RC60 ..... 1 set
* 12:1 Servo Control Zoom Lens WV-LZ12/12 ..... 1 pc
* Studio Conversion Kit WV-LK11 ..... 1 set
* Studio Cable 14C-30 ..... 1 pc
* White Balance Set Chart ..... 1 pc
* Color Sheet ..... 1 pc
* PCB Extender Board ..... 1 pc

■ **Main Optional Accessories**

* **Remote Control Unit (RCU) WV-RC60**
* Remote Control Unit (RCU) ..... 1 set
* 4-pin Connector for Tally/Intercom ..... 1 pc

* **5" Monochrome Electronic Viewfinder WV-VF65**
* 5" Monochrome Electronic Viewfinder ..... 1 set
* Mounting Base ..... 1 set
* Tally Card ..... 1 set

* **1.5 " Monochrome Electronic Viewfinder WV-VF60**
* 1.5" Monochrome Electronic Viewfinder ... 1 set

* **1.5" Color Electronic Viewfinder WV-VF61**
* 1.5" Color Electronic Viewfinder ..... 1 set

* **12:1 Servo Control Zoom Lens WV-LZ12/12**
* 12:1 Servo Control Zoom Lens ..... 1 pc

* **Shoulder Pad WV-Q40A**
* Shoulder Pad ..... 1 pc
* Tripod Mounting Block ..... 1 pc

* **Studio Conversion Kit WV-LK11 for WV-LZ12/12**
* Zoom Controller ..... 1 pc
* Focus Controller ..... 1 pc
* Gear Box ..... 1 pc

* **Stereo Microphone WV-MC60**
* Stereo Microphone ..... 1 pc

* **Battery Pack WV-PS60**
* Battery Pack ..... 1 pc

■ **Other Optional Accessories**

* VTR Cable : WV-CA14/10 (14P-10P) 10ft
  WV-CA14/14 (14P-14P) 10ft
* 14-pin VTR Extension Cable : 14H-30 ..... 30ft
* Studio Cable : 14C-30 ..... 30ft
* Studio Extension Cable : 14C-100 ..... 100ft
* Battery Charger for WV-PS60 : DE-1232
* Carrying Case : WV-CC60

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